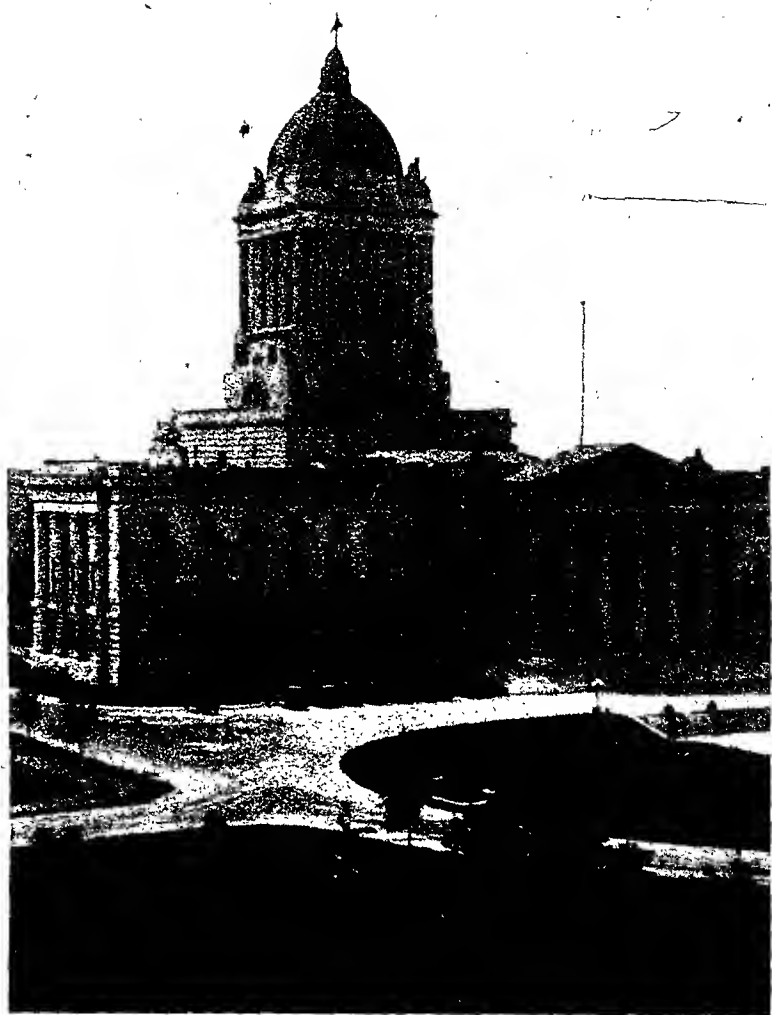




MANITOBA





Manitoba Government Building, Winnipeg

MANITOBA

CANADA

Its Resources and Development

By

F. H. KITTO, F.R.G.S.

DEPARTMENT OF THE INTERIOR, CANADA

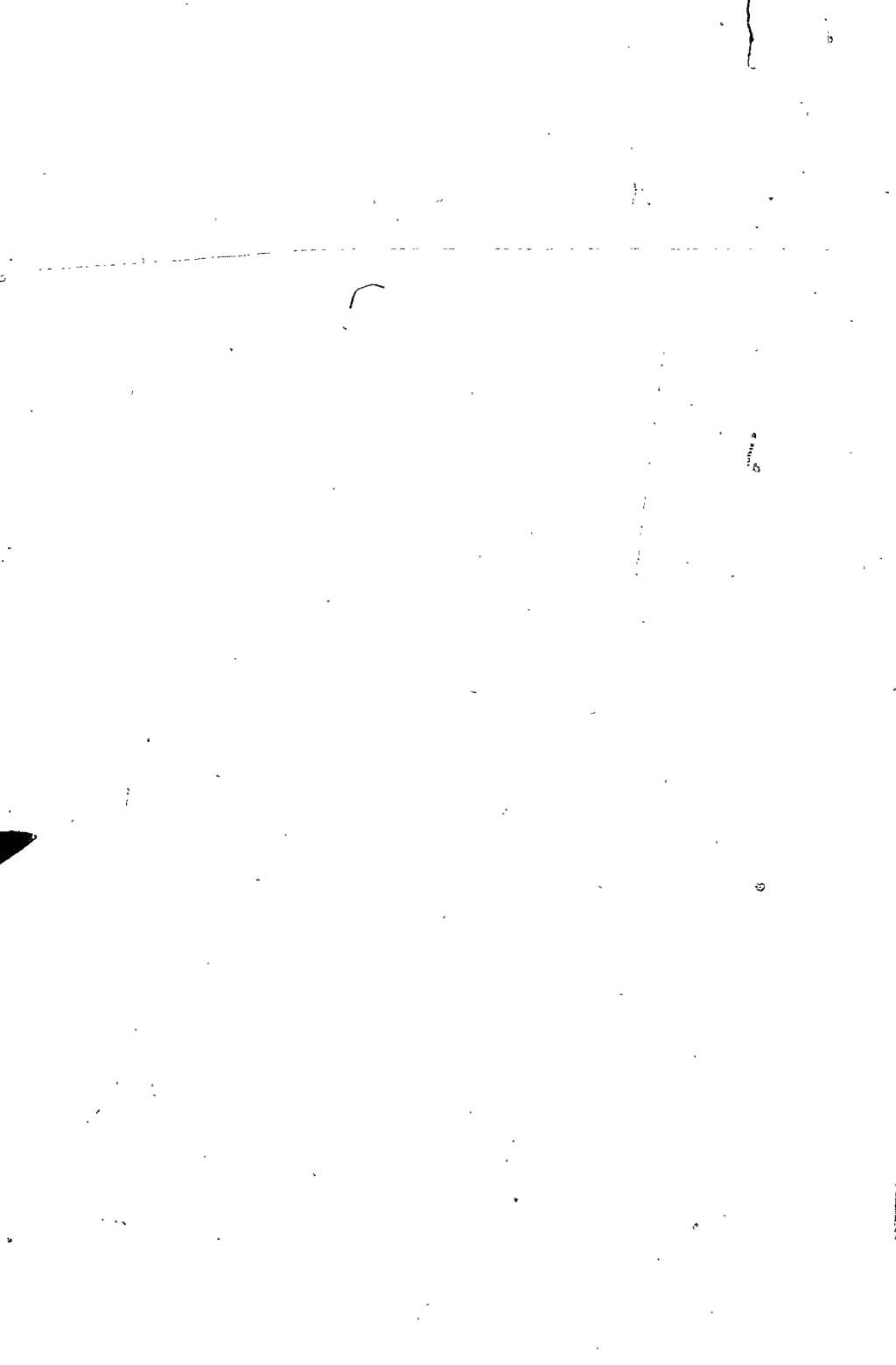
Hon. THOMAS G. MURPHY, Minister.

H. H. ROWATT, Deputy Minister.

NATIONAL DEVELOPMENT BUREAU

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OTTAWA, 1931



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Manitoba, Canada

CHAPTER I

GENERAL DESCRIPTION

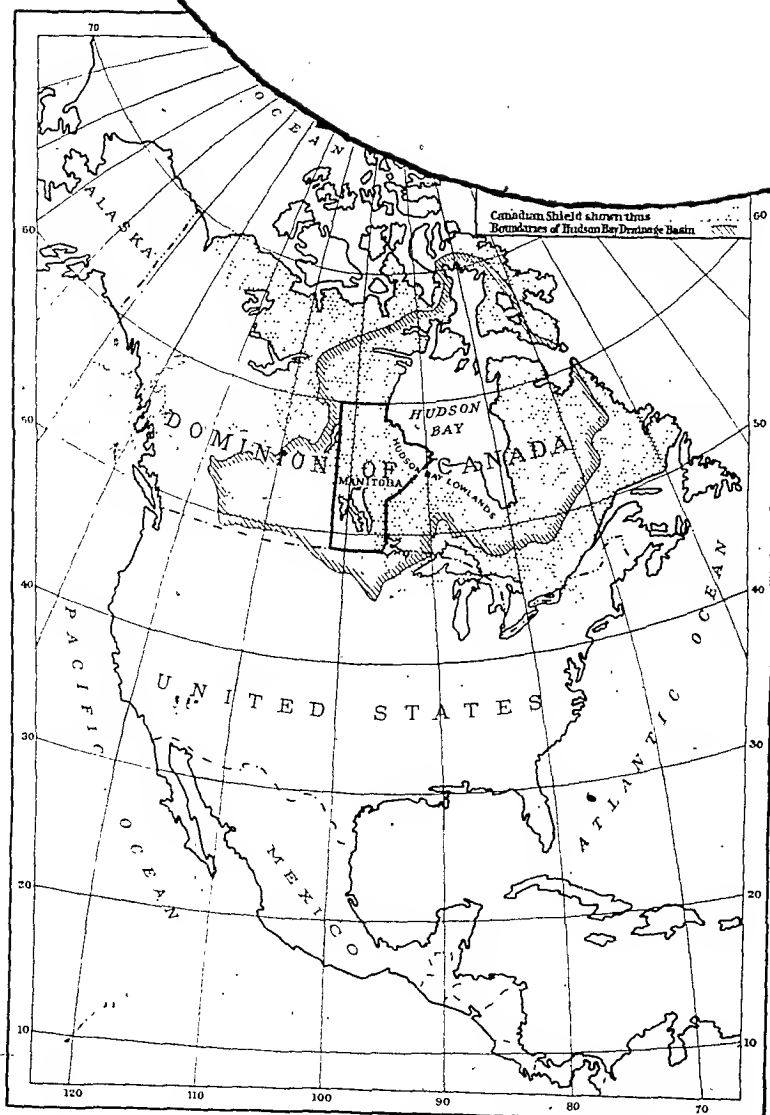
On July 15, 1930, Manitoba celebrated its Diamond Jubilee—the sixtieth anniversary of its creation as a province of Canada. The occasion was made exceptionally gratifying to its people by the transfer, on that date, of the natural resources within the borders of their domain from federal to provincial ownership and control. Manitoba was thus placed on an equal status in this respect with the older and original provinces of Confederation—a status now enjoyed by every province of the Dominion.

The Manitoba of 1870 was little more than a brave experiment. From its newly acquired and vast territory of Rupert's Land, Canada carved out a small area to include the pioneer Red River Settlement that was struggling for a permanent foothold under the lee of old Fort Garry, and made of it a new province. Isolated from its sister provinces and civilization in general, and faced with pioneering conditions of unusual difficulty, the little province had anything but an auspicious start.

The growth and progress of Manitoba during the sixty years of its existence is nothing short of remarkable. Its boundaries have been enlarged to include an area over eighteen times as large as the original area. Its population has increased to a number about thirty times as great as that of 1870.

The first great development of Manitoba was an agricultural one, and agriculture remains its fundamental industry. Then, because of its key location as the gateway to the West, the province, and particularly its capital city, Winnipeg, assumed an important place in transportation circles. A wholesale and distribution business took root and expanded rapidly. With the development of extensive and cheap hydro-electric power, great industrial activities followed. During recent years the province has assumed a new role as a mining field of major importance.

Manitoba is the mid-continent province of Canada and the oldest of the three prairie provinces. It is the only prairie



Prepared by Natural Development Bureau, Dept. of Interior

nce with a sea-coast, possessing 440 miles of shore-line Hudson bay. In area it ranks fifth among the nine provinces of Canada, and in population it ranks fourth. It has successfully passed through many pioneering stages, and stands to-day as a thoroughly organized and modern state—a land of vast and varied natural resources and great opportunities. Though its past achievements have been remarkable, its immediate future development holds promise of immeasurably greater accomplishments.

LOCATION AND AREA

Manitoba is known as a western province. As a matter of fact over half of it lies east of that meridian of longitude which is midway between the extreme east and west points of Canada. It might therefore be designated more logically as the central province of the Dominion. The term "western" has clung to it from early days when it was indeed a long way west of the Canada of Confederation.

The southern part of Manitoba lies near the geographical centre of the mainland of North America. Its northeastern part borders on the extreme west shore of Hudson bay. It is the eastern of the three so-called Prairie Provinces of Canada.

Boundaries. Manitoba is bounded on the east by the province of Ontario and Hudson bay; on the south by the United States of America (North Dakota and Minnesota); on the west by the province of Saskatchewan; and on the north by the Northwest Territories of Canada (Keewatin District) and Hudson bay.

Geographically, Manitoba lies within that area extending from longitude 89° West to longitude 102° West and from latitude 49° North to latitude 60° North. Its shape might be described as rectangular with a triangular extension to the north-central part of the east side. The north and south dimensions of the rectangular part are nearly three times those of its east and west dimensions, and this part lies almost entirely west of the 95th meridian of West longitude. The apex of the triangular extension is the intersection of the 89th meridian of West longitude with the southwest shore of Hudson bay.

From south to north, Manitoba thus extends across eleven degrees of latitude, a distance of 761 miles. Along the 49th parallel of North latitude its east and west measurement is

approximately 278 miles, and along the 60th parallel it is approximately 260 miles. Its maximum spread in longitude, thirteen degrees, occurs a little below the 67th parallel of latitude, and is equivalent to approximately 493 miles.

The original boundaries of the province, as defined by The Manitoba Act of 1870, were: on the south, the International boundary line; on the north, latitude $50^{\circ} 30'$ North; on the east, the 96th meridian of West longitude; and on the west, the 99th meridian. The east and the west boundaries were subsequently adjusted very slightly to adhere to township survey lines.

In 1881, the boundaries were further extended, the western line being extended nearly three degrees in longitude, and the northern one nearly two and a half degrees in latitude. The eastern line was to be the western boundary of Ontario. This boundary was at the time in dispute, Ontario claiming as far west as the northwest angle of the Lake of the Woods, and the Dominion Government claiming that the boundary was the prolongation of a line due north from the mouth of the Ohio river, which line would cross lake Superior in the longitude of Fort William. The matter was finally settled in 1889, the western boundary claimed by Ontario being accepted.

In 1912 the Dominion Government granted a still further extension of boundaries to put Manitoba on a more equitable basis of area with the new provinces of Alberta and Saskatchewan. The present boundaries were then defined by Act of Parliament.

Area. The original area of Manitoba in 1870 was 13,928 square miles. Because of its insignificant or suggestive appearance on the map of Canada, it was often referred to as the "postage stamp" province.

The increase in area of 1881 was 59,804 square miles, bringing the total area up to 73,732 square miles. The increase of 1912 was 178,100 square miles.

The area of Manitoba, consequently, is now 251,832 square miles. Of this, 224,777 square miles are land and 27,055 square miles are covered by water.

The total area of Manitoba is more than double that of the British Isles or of Italy. It is greater than that of the German Empire, of Spain or of France. The states of Maine, New

Hampshire, Vermont, New York, Massachusetts, Rhode Island, Connecticut, New Jersey, Maryland, Virginia, Delaware, Pennsylvania and West Virginia have a combined area that is less than the total area of this Canadian province. The land area alone of Manitoba exceeds the combined areas of the adjacent states of North Dakota, South Dakota and Minnesota.

GEOLOGICAL FEATURES

There are five principal geological regions in Canada, namely: (1) the Appalachian region including the Maritime provinces and eastern Quebec; (2) the St. Lawrence lowlands of southern Quebec and southern Ontario; (3) the Laurentian plateau surrounding Hudson bay; (4) the Great Plains region of Western Canada; and (5) the Cordilleran region or the mountainous area extending from the Rocky mountains to the Pacific coast. The province of Manitoba lies partly within the Laurentian plateau and partly within the Great Plains region.

The Canadian Shield. The Laurentian plateau, or Canadian Shield, as it is perhaps better known, is a vast horseshoe-shaped area surrounding Hudson bay and extending from the Atlantic ocean, on the Labrador coast, south and west around James bay, and then northwesterly by lakes Winnipeg, Athabaska, Great Slave and Great Bear to the Arctic coast. It spreads south to lake Huron and lake Superior and occupies nearly all of the provinces of Ontario and Quebec, except the western peninsula of Ontario, that part of Quebec lying south of the St. Lawrence river, and the James Bay lowlands. It includes nearly all that part of Manitoba lying to the east and to the north of lake Winnipeg, which represents more than three-fifths of the entire area of the province.

The Laurentian plateau, considered as a whole, is comparatively level and rather low, seldom attaining an altitude of 2,000 feet above sea level. However, its surface is broken by irregular hills, mounds, valleys and ravines, which give variations in altitude of a few hundred feet. The underlying formation is principally of igneous rocks together with a lesser amount of hardened sediment. These rocks are mainly of granite type and are very hard and resistant. They are among the oldest rocks of the earth's crust and are weathering and crumbling

very slowly. They are classified by geologists as Precambrian. Glacial action has carried away much of the soil of the higher places leaving large areas of barren rock without even sufficient nourishment for tree growth. The valleys, however, as a rule, are rich in soil and prolific in vegetation and the greater part of the entire area is wooded.

Great Plains Region. The Great Plains region includes the southwestern part of Manitoba, the southern and central parts of Saskatchewan and nearly the whole of Alberta. In this area are found the extensive and beautiful prairies that have made the west famous, as well as great areas of park and forest lands.

The Great Plains region consists of a series of three steppes or levels, in the lower one of which lies the centre of industrial Manitoba. This lower level is that of the Red River valley, the Winnipeg system of lakes and the flat land surrounding them. It is underlain by Palaeozoic rocks which are fairly hard. The average elevation of this plain is about 800 feet above sea level.

Westerly the Great Plains rise to a second level, having an elevation of 1,500 feet and over. The rise from the first to the



Rows of Manitoba Maples

second prairie steppe is marked by the Manitoba "escarpment." The second prairie steppe extends westerly well across Saskatchewan, and this rises again to a third level, which gradually merges into the foothills of the Rockies. The second and third steppes are underlain by cretaceous rocks of later Mesozoic age.

The lower or Manitoba prairie level was covered in ages past by a great glacial lake called by geologists lake Agassiz. It extended south of the International boundary line to include parts of North Dakota and Minnesota, east as far as Rainy lake, west to the Manitoba escarpment, and north almost as far as the Churchill river. Upon its recession it left a deep deposit of silt which has resulted in the present extremely fertile soils of the Red River valley. In the southwestern part of the province was another glacial lake called lake Brandon.

Hudson Bay Lowland. Between the Laurentian plateau and the Great Plains regions there is, in Manitoba, an intermediate belt where the underlying Precambrian rocks are covered by flat-lying limestones of Palaeozoic age. Another area where similar formations have hidden the older rocks is that known as the Hudson Bay lowlands of the Nelson river estuary. It extends north to Churchill and southeast to the Ontario border and centres about the mouth of Nelson river.

PHYSICAL FEATURES

Manitoba lies within the Hudson Bay watershed. Its principal systems of drainage are the Nelson and the Churchill. The Nelson drainage basin is the second largest in Canada, being exceeded by the Mackenzie only and in turn exceeding the St. Lawrence. The Churchill ranks seventh in Canada.

Lakes. In the south-central part of the province is a group of large and small lakes representing the present state of former glacial lake Agassiz. These lakes now act as a great reservoir and filtration basin for the muddy waters of the vast prairie regions to the west and the south. Into them flow many large and small rivers known individually under various names, but which collectively constitute the upper part of the Nelson river system.

The largest of these bodies of water is lake Winnipeg, 9,459 square miles in area. Paralleling it on the west and within a

few miles of it are lakes Manitoba, 1,817 square miles, and Winnipegosis, 2,086 square miles. Lake Dauphin, Cedar lake and Moose lake are other units in this system.

Rivers. Winnipeg river flows into the southeasterly part of lake Winnipeg. It comes from the southeast, flowing through Laurentian county and having along its course several rapids and falls that are being utilized in the development of hydro-electric power. Several other large rivers also enter this lake from the east.

Flowing into the lower or southerly end of lake Winnipeg is the famous Red river of the North. It rises south of the International boundary and drains the fertile plains that witnessed the first agricultural settlement of Western Canada. The Assiniboine is its principal tributary, joining it at Winnipeg and draining a large tract of prairie country lying to the west. The Qu'Appelle and the Souris are the principal tributaries of the Assiniboine. These rivers have sluggish currents and muddy water.

The largest branch of the Nelson river system is the Saskatchewan river. It drains the great central area of Alberta and Saskatchewan and enters Manitoba west of The Pas as a large river. Cedar lake is an extension on its course and it enters the northwest part of lake Winnipeg at Grand Rapids.

The Nelson river proper flows from the northeasterly extremity of lake Winnipeg in a northerly direction for a total airline distance of about one hundred miles. In this section it is broken and made irregular by many lake expansions and rocky islands and promontories. It then turns in a more northeasterly direction and assumes a well defined channel. Areas of clay are encountered but for the most part its course is cut through a rocky formation, giving rise to many rapids. The most noteworthy of these are the Kettle rapids where the Hudson Bay railway makes its second crossing of this river. Its waters reach Hudson bay at about latitude 57° North.

North of the Nelson river is the Churchill, the mouth of which forms the only natural harbour on the Manitoba shore of Hudson bay. The Churchill drains the great north-central part of Saskatchewan and crosses Manitoba in a northeasterly direction. On its course, which is entirely in Laurentian county, are numerous rapids and falls and lake expansions. Southern

Indian lake, 1,200 miles in extent, is one of these expansions in Manitoba. Reindeer lake, lying on the Manitoba-Saskatchewan boundary, is also drained by the Churchill.

Between Nelson river and the Manitoba-Ontario boundary line is a tract of rocky country drained by Hayes river, which in its last few miles parallels the Nelson and reaches Hudson bay in almost a common estuary. It rises in Oxford and Gods lakes and a few short portages give connection to the Nelson just below Norway House.

Elevations. In no part of the province are to be found high mountains, though hills and elevations of some prominence abound. From sea level at the shores of Hudson bay to the plains about Winnipeg there is but a rise of about 800 feet. The greatest elevations elsewhere in the province are not over 2,600 feet. They occur in the Manitoba escarpment, the principal ranges of which are known as the Pembina, Turtle, Riding, Duck and Porcupine mountains.

Early descriptions of Manitoba emphasized the great prairies that were crossed by transcontinental travellers. While it is true that there are expansive tracts of almost level, open country in Manitoba where wheat fields may still be seen in every direction, as far as the horizon, it is also true that much of the agricultural country is delightfully rolling and made quite picturesque by streams that wind through valleys bordered by attractive woods.

SOIL

To the exceeding fertility of its soil Manitoba owes its transition from a fur trading domain to one of the richest agricultural districts of the world. The luxuriant growth of native vegetation and the astounding results that followed early experiments in making kitchen gardens about the trading posts proclaimed to the observant white man the agricultural possibilities of the prairies. The fame of the Red River soil soon spread far and wide and connoisseurs of lands rather than of furs came to share in its division.

To the non-scientific this land is known as fertile, level, easy to till and free of stones. It does not harden or bake and requires no additional fertilizer for many years after being broken up and cropped. The most uniform extensive area is that of the first prairie steppe, or the Red River valley at large.

The richness of the prairie soils is due to the tremendous accumulation of nitrogenous organic matter with its associated mineral constituents. This matter has been created by the decaying of countless generations of grasses and leguminous herbage that have continuously covered the prairies since the glacial period. Of all the elements of plant food, nitrogen is the most potent in its influence on crop production. It is stored by nature in humus in order that it may be readily nitrified and made available for crop use. Upon further decay the humus liberates other valuable crop food supplies. Prairie soils have also a remarkable faculty for retaining moisture, an important consideration where the rainfall is not heavy.



Wheat Field in Southwestern Manitoba

Soils of Southern Manitoba. Extensive agricultural surveys, including soil surveys, have been made in southern Manitoba by officers of the Manitoba Agricultural College and others, and the results have indicated that there are several zones in which the soil formation, altitude and native vegetation are somewhat distinctive. The Red River valley comprises one of these. Its area is about 3,250,000 acres extending in a wide belt from the International boundary line to the south shores of lakes Winnipeg and Manitoba.

A zone known as the Assiniboine delta extends in a fan shape from Brandon to Neepawa, Portage la Prairie and Carman.

It comprises about 1,750,000 acres. The soil varies from fertile sandy loam to dune sand. This area was actually the delta of the Assiniboine river during the past ages when glacial lake Agassiz existed.

East of the Riding mountains is another area including the Eden and Dauphin districts. It is known as the Riding Mountain Wash and has a soil that varies greatly in composition. Some is very rich and some is sandy, gravelly or swampy.

The Swan River valley, comprising about 450,000 acres, is somewhat varied also, but the land that is suitable for agriculture is very fertile.

The whole of that part of southern Manitoba falling within the Laurentian geological division may be classed, in general terms, as non-agricultural land except for hay and pasture. Some of the soil is very good but much of it is stony, gravelly or peaty. Large outcrops of rock occur in the eastern part and much of the area is poorly drained.

All along the Manitoba escarpment, extending from the International boundary northwesterly to the Swan River valley, and varying in width, is an area in which boulder soil and glacial drift predominate. This area includes the Pembina, Turtle, Riding and Duck mountains, and Arrow hills. Much



Dairy Herd near Brandon

of it is too mountainous for tillage and much is hilly and stony but a considerable amount of excellent farming land is found also.

The southwestern or Souris Plains zone has a soil of modified drift, with some sand deposits and dune sand adjoining the Assiniboine river. This area was formerly known as "The Short Grass Country."

Soils of Northern Manitoba. In northern Manitoba there is a clay belt estimated to cover an area of about 10,000 square miles or 6,400,000 acres, of which from 50 to 75 per cent is thought to be arable. This belt lies principally between the Nelson and Churchill rivers and is traversed by the Hudson Bay railway which reaches it about 130 miles from The Pas. The soils of this area were deposited as beds of old lakes and are well suited to mixed farming.

There are also many extensive areas of swamp soils, which in their present state are almost worthless owing to lack of drainage but which are capable of producing good crops of hay, grain and vegetables when cleared, drained and brought under cultivation. Along the shores and in the valleys of innumerable lakes and rivers are to be found scattered areas of exceedingly fertile alluvial soils. While from an agricultural standpoint alone these lands are too limited and difficult of access to be recommended for settlement, they have a real value when other developments in their vicinity create a local market for garden and dairy produce. With the influx of a mining population, any such tracts of land within a reasonable distance of a mine centre will offer good inducements for development.

CLIMATE

The climate of Manitoba, though early regarded as severe, is now recognized as being a valuable asset. It is pleasant, healthful and invigorating. To it the province is indebted in no small degree for the high energy and vitality of its inhabitants and the extraordinary quality of its agricultural products.

Manitoba's climate is typically continental in character, which is to be expected from its location. Differences which prevail in various districts are due chiefly to latitude and to some extent to elevation. Within the belt of latitude in which Manitoba lies (49° North to 60° North) are found the British Isles, Holland, Belgium, Denmark, Poland, most of Germany,

mid-Russia, the extreme north of France and small areas in the southern parts of Norway and Sweden.

Seasonal Characteristics. The winter season is rather long, averaging about five months, from November to March inclusive. In the southern part of the province it is somewhat shorter and in the northern part it is a little longer. It may be described in general terms as being clear, cold, and dry, with a liberal amount of sunshine and comparatively few stormy days.

The change from winter to spring is rapid and this season is short and perhaps most noted for its warm day temperatures and frosty nights.

The summer season is of moderate duration. It is enhanced by long daylight periods of liberal heat and sunshine, lingering twilights and short cool nights. The varying lengths of days and nights throughout the changing seasons are the same, of course, in equal latitudes. Visitors from the British Isles find the hours of sunrise and sunset in Manitoba practically unchanged, while those from Eastern Canada and the United States are agreeably surprised at the length of daylight periods during the summer season.

The autumn season is of uncertain length as winter sometimes sets in suddenly. As a rule, summer merges gradually into autumn. October may be considered a true autumn month. Open weather sometimes extends well through November in the southern parts of the province.

Temperatures. There is a considerable range of temperatures in Manitoba, both daily and throughout the year. The average daily change in Winnipeg is from 20 to 25 degrees. The mean range between the warmest and coldest months of the year is 70 degrees. Changes of 40 degrees in 24 hours are not uncommon and a range of 149 degrees during a year has been recorded at Winnipeg.

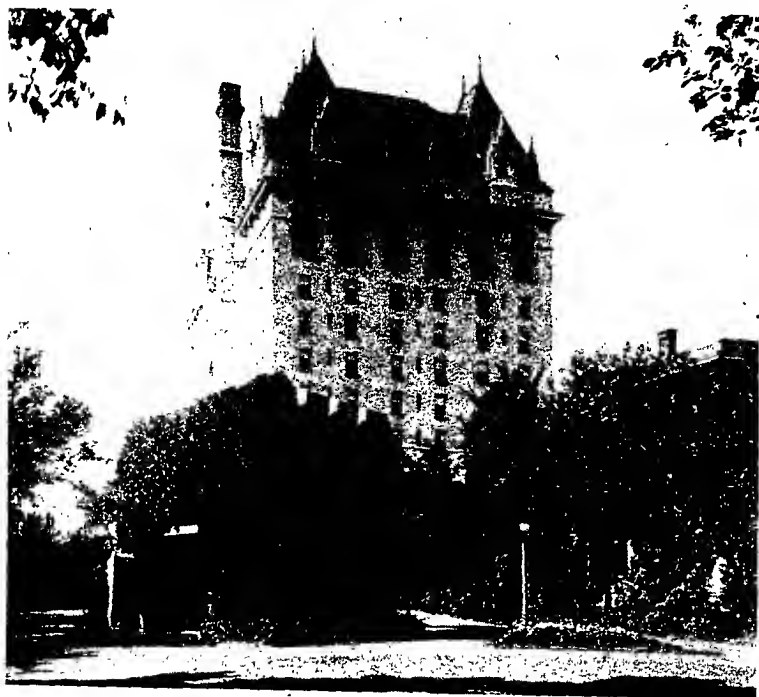
Short spells of weather considerably below the season's average, known as "cold snaps," are, as a rule, experienced during the course of each winter, and a few exceptionally hot days occur during each summer. Temperatures during the cold snaps fall below 35 degrees below zero. During the hot spells they rise above 90 degrees.

A dry, clear day of 10 to 25 degrees below zero in Manitoba is much more pleasant than a damp and chilly day in many

lands where the freezing point has not been reached. For proof of this statement one has only to observe men at work in such weather, children at play, or cattle contentedly feeding in the open. The heat of summer is less oppressive than might be expected. Murky days are unknown and the nights are invariably cool and conducive to rest.

Precipitation. Rainfall is light to moderate but sufficient for the requirements of all classes of grains and vegetables. It occurs mainly during the growing season and frequently in thunder storms. Hail storms are few in number and are restricted to small areas. Cyclones and other disturbances are unknown.

The snowfall of Manitoba is reported by the Meteorological Service of Canada to be from 50 to 55 inches in the eastern and southwestern districts and from 40 to 45 inches in the central and northwestern districts. The ground is usually covered with snow from December to March, but the depth is seldom great. Occasional gales cause drifting and packing. Sometimes



Gateway of Old Fort Garry and The Fort Garry Hotel

on the prairies these develop, when the snow is very dry, into blinding storms known as "blizzards." Ice forms to a considerable thickness on all lakes and rivers but does not prevent the continuous operation of hydro-electric plants.

The average annual precipitation is about 20 inches, of which about 15 inches fall as rain and the equivalent of 5 inches in rain as snow.

TABLE I.—NORMAL TEMPERATURE AND PRECIPITATION
AT WINNIPEG

(Observations for 44 years, 1885-1928)

TEMPERATURE (Fahr.)

1885-1928 Month	Mean daily	Mean daily max.	Mean daily min.	Highest	Lowest	Mean daily range
January.....	- 2.09	7.50	-11.65	42	-46	19.18
February.....	14.50	12.02	- 9.02	46	-46	21.07
March.....	16.59	27.59	5.70	73	-37	21.88
April.....	38.75	49.74	27.75	90	-13	21.97
May.....	51.95	64.81	39.05	96	11	25.72
June.....	62.27	74.47	50.19	101	21	24.27
July.....	66.63	78.45	54.79	98	35	23.60
August.....	63.16	75.09	51.23	103	30	23.86
September.....	54.41	65.89	42.95	99	17	22.91
October.....	41.63	51.62	31.72	86	- 3	19.86
November.....	22.93	31.04	14.85	71	-33	16.20
December.....	7.02	15.79	- 1.78	49	-44	17.56
Year.....	36.48	46.17	24.65	103	-46	21.51

PRECIPITATION IN INCHES

1885-1928 Month	Averages			Extremes	
	Rain	Snow	Total	Great	Least
January.....	0.01	8.61	0.87	3.36	0.12
February.....	0.01	7.47	0.75	2.52	0.09
March.....	0.16	9.75	1.14	3.00	0.09
April.....	1.04	3.69	1.41	5.64	0.16
May.....	1.94	0.65	2.00	6.38	0.03
June.....	2.93	0.00	2.93	6.30	0.45
July.....	2.91	0.00	2.91	7.14	0.61
August.....	2.17	0.00	2.17	4.75	0.13
September.....	2.24	0.12	2.25	5.49	0.60
October.....	1.15	2.23	1.38	5.67	0.21
November.....	0.29	8.02	1.09	3.03	0.06
December.....	0.04	8.42	0.88	3.99	0.11
Year.....	14.89	48.96	19.78	28.40	13.76

CHAPTER II

HISTORICAL SKETCH

EARLY EXPLORATIONS

The history of Manitoba, insofar as the White race is concerned, covers a period of over three hundred years. It might be dated from 1610 when Henry Hudson, renowned navigator, in his little ship, the *Discovery*, sailed through Hudson strait and discovered Hudson bay. Both strait and bay were subsequently so named in his honour. Hudson coasted south as far as the foot of James bay, where he wintered. In the spring of 1611 he was cast adrift by his mutinous crew and his fate has remained shrouded in mystery. A few survivors of the crew finally managed to sail his vessel back to England.

In 1612 Sir Thomas Button was sent from England in search of Hudson. He sailed the same ship, but did not succeed in his mission. Late in the year he entered the mouth of a large river on the west coast of Hudson bay and established winter quarters. He named this river the Nelson, in honour of his sailing master.

First White Man in Manitoba. Button, in 1612, was the first white man to set foot on what is now Manitoba soil. Before leaving in the following spring, he set up a wooden cross bearing an inscription claiming possession of the region for the British Crown. This region has been British territory ever since. It has been under one flag longer than any other extensive part of North America.

Discovery of Churchill Harbour. In 1619 a Danish navigator, Jens Munck, in search of the "northwest passage" with two ships and a crew of 64 men, discovered Churchill harbour and Churchill river. Munck wintered in the harbour but lost almost his entire crew through exposure and illness. He managed to reach his home the following year with one vessel and two men.

Extensive explorations of the coast-lines of Hudson and James bays and of part of Foxe channel were made in 1631 by two British expeditions in command of Captain Luke Foxe and

Captain Thomas James. Foxe found the cross that had been set up by Button but which had fallen. He re-erected it and attached to it a lead plate with an inscription renewing the British claim to the territory. James wintered near the foot of James bay and concluded his explorations in 1632.

These exploring expeditions pioneered the way for commercial undertakings. In 1658 the "Nonsuch," the first trading vessel to enter Hudson bay, arrived from England. It returned the following year with a valuable cargo of furs secured through barter with the native Indians of the James Bay coastal regions. The success of this venture led to the organization in 1670 of the Hudson's Bay Company.



A Winter Scene in Manitoba

Inland Explorations. For many years this Company was content to trade with the Indians that visited the shores of Hudson and James bays, and therefore did not particularly attempt inland explorations. In 1691, a young employee named Henry Kelsey travelled from the mouth of Nelson river some distance inland with the Indians, but his records are so incomplete and puzzling that his explorations are of no value. Anthony Hendry, another employee, accompanied a band of Indians, in 1754-55, from the same point as far as the Saskatchewan

river and the prairies. It is quite certain that he saw and hunted the bison or buffalo. During the years 1770 to 1772, Samuel Hearne, an officer of the Company, made his famous journey from Fort Prince of Wales (Churchill) to the Coppermine river. He crossed and re-crossed the extreme northern part of the Manitoba of to-day.

La Verendrye at Site of Winnipeg. Meanwhile the southern part of Manitoba was being explored. On September 24, 1738, there arrived at the junction of the Red and Assiniboine rivers that famous French explorer, Pierre Gaultier de Varennes, Sieur de la Verendrye. Six years earlier he had set out from Montreal, with his three sons and his nephew, to cross the continent, if possible. After many adversities, including the loss of one son and his nephew, la Verendrye succeeded in blazing a route by way of lake Superior, lake Winnipeg and the mazes of waterways leading to them, to the site of the present city of Winnipeg.

On this site la Verendrye built Fort Rouge, and near the site of Portage la Prairie he built Fort la Reine. From Fort la Reine he and his remaining sons explored the western prairies. They were the true explorers of the territory included in the Red River Settlement and the original province of Manitoba. The sons journeyed as far west as the Rocky mountains, but the party did not succeed in reaching its ultimate objective—the western sea and the Orient. It did, however, pioneer the way for a great overland fur trade between Eastern and Western Canada.

La Verendrye, who personally explored as far south as the Missouri river, claimed these great prairie lands for the French Crown. Had the French retained their foothold in Eastern Canada, they would doubtless have challenged the British claim to the prairie portion of Rupert's Land, but this foothold was relinquished in 1763. La Verendrye shares with Button pioneer honours in Manitoba. Button was the first white man to visit the shores of northern Manitoba; la Verendrye, the first to visit the prairies of southern Manitoba.

THE FUR TRADE.

The pre-provincial history of Manitoba is largely the history of the fur trade of those regions now included within its

boundaries. Trading and exploring went hand in hand. In the majority of cases the fur-trader was an explorer, and frequently the explorer was compelled to turn trader in order to finance his schemes. The two hundred years prior to the creation of the province are particularly associated with the Hudson's Bay Company.

The Hudson's Bay Company. In 1670 King Charles II granted to "The Governor and Company of Adventurers of England trading into Hudson's bay" (The Hudson's Bay Company) a royal charter granting them practically sovereign rights over all the territory draining into Hudson bay and Hudson strait. The first governor of the Company was Prince Rupert, and the territory granted was designated as "Rupert's Land."

The Hudson's Bay Company's history in Manitoba might be divided into three periods, namely, from 1670 to the ceding of Canada to England by France in 1763; from 1763 to the amalgamation of the Company with its powerful rival, the North West Company, in 1821; and from 1821 to the surrender by the Company of its special privileges in 1869, or to the creation of Manitoba, in 1870.

The first period witnessed the Company's struggle to establish and maintain a chain of posts on the shores of Hudson and James bays. The difficulties were two-fold. One phase was the hazardous undertaking of piloting vessels into these great uncharted and ice-strewn seas, establishing posts on the bleak and lonely shores where only yearly calls could be made, and gaining the friendship and confidence of savage tribes speaking strange tongues. The other phase was the holding of the trade against the spirited attacks from time to time of a rival nation that sought to extend its colony of New France to the shores of Hudson bay.

Nelson and Churchill. Two important posts were established in what is now Manitoba territory, namely, Port Nelson and Fort Churchill. Port Nelson was the storm centre of repeated attacks and counter attacks. It changed hands and was destroyed and rebuilt, time after time. The lowest ebb in the Company's fortunes was reached in 1697 when a spectacular raid led by the fiery d'Iberville robbed it of all posts but one, Fort Albany. Fortunately for its future success England's

claim to the Hudson Bay country was confirmed by the French in the Treaty of Utrecht, 1713, and all captured posts were restored.

Fears of future attacks led to the building of Fort Churchill in 1718, and, during the years 1733-71, of Fort Prince of Wales, which replaced it. The latter fort was one of the notable strongholds of North America, but in 1782 the French Admiral, la Pérouse, sailed across the bay in his 72-gun flag ship and captured it, as well as Fort Nelson. The fortifications of both were demolished before he sailed away. The ruins of Fort Prince of Wales are preserved as a Canadian Historic Site. Fort Nelson was replaced by York Factory, located at the mouth of Hayes river which has a common estuary with the Nelson.



Gateway of Old Fort Prince of Wales

The North West Company. The second period was noted for the rise of the North West Company, which was organized in Montreal in 1783, and which proved a powerful rival of the Hudson's Bay Company for the fur trade of Western Canada. The new Company adopted the policy of going right into the heart of the fur country instead of waiting for the Indians to bring their wares out. The older Company was obliged to follow similar tactics, and in a short time the whole of what is now Manitoba was overrun by traders. Rival posts were established at every important strategic point, and competition waxed exceedingly keen.

The North West Company made use of the la Verendrye route which had already become an important artery of commerce in the fur trade. It had been followed for many years by French traders, and after 1763 by various independent English and Scotch merchants of Montreal. On it the picturesque French-Canadian canoe-men, or voyageurs, paddled their way into fame.

Forts Gibraltar and Douglas. Wintering headquarters were established at Fort William on lake Superior, and in 1807 Fort Gibraltar was erected at the junction of the Red and Assiniboine rivers as a western rendezvous. It was located on or near the site of la Verendrye's old Fort Rouge. To match it, the Hudson's Bay Company built Fort Douglas on a site about a mile farther down-stream. Both forts were located where Winnipeg now stands.

Union of Fur Companies in 1821. Competition was carried to such extremes that acts of violence became frequent. Finally in 1816 there occurred a regrettable outbreak at Seven Oaks when several lives were lost. A solution of the situation was fortunately effected by an amalgamation of the rival interests in 1821 under the name of the Hudson's Bay Company.

The third period marked the transition from the predominance of the fur trade to that of agriculture. With the coming of Selkirk's Red River colonists there began a new era on the great plains. Though nominally the rights to this territory and the privileges granted the Hudson's Bay Company in its charter of 1670 were still in force, and continued so till voluntarily surrendered in 1869, it is to the credit of the united fur-traders that they realized the inevitable and gradually withdrew their opposition to settlement.

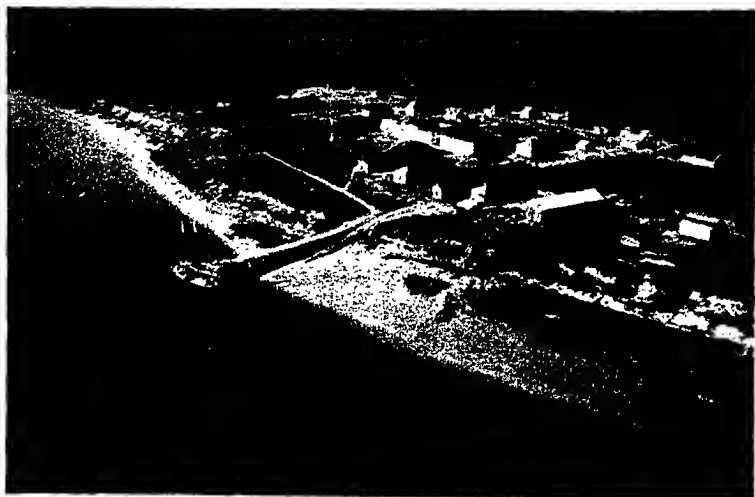
Fort Garry. In 1822 Fort Garry was erected on or near the site of Fort Gibraltar. In 1835 it was rebuilt of stone and for many years was headquarters for an extensive trade that flourished following the amalgamation of 1821. It was finally demolished to make way for the opening of Winnipeg's Main Street, with the exception of the north gate which remains as a most interesting landmark of Manitoba's early fur trade.

The close of this period of the fur trade saw the surrender by the Hudson's Bay Company of its territorial claims to Rupert's Land, since when its status has been that of a purely

commercial concern. To the early fur trade the nation is indebted for the holding of a great territory against the day of settlement, first from foreign invasion on Hudson bay and later from possible encroachments in the Red River valley.

RED RIVER SETTLEMENT

The earliest attempt at land settlement and agricultural pursuits on the western plains of Canada was the colonization settlement made by Thomas Douglas, Earl of Selkirk, on the banks of the Red river in 1812, and succeeding years. A tract of Rupert's Land, consisting of 116,000 square miles, was granted by the Hudson's Bay Company to Selkirk in 1811. This tract, to which he gave the name of Assiniboia, centred at the junction of the Red and Assiniboine rivers, and extended from latitude $52^{\circ} 30'$ North to the height of land separating the waters flowing into Hudson bay from those of the Missouri and the Mississippi. The grant included what is now a portion of Saskatchewan, the whole of southern Manitoba, a part of western Ontario, and parts of the states of North and South Dakota and Minnesota. About one-half of the area extended into the United States, the boundary of 49° North latitude not having been agreed upon before 1818. This grant included large areas of the richest prairie soils.



Aerial View of York Factory

Pioneer Hardships. Selkirk's colonists were drawn mainly from the north of Scotland. The first contingent sailed in 1811 and landed at York Factory too late in the season to advance inland. There the unfortunate people were forced to winter under great hardships. In 1812 they completed their long and tedious journey by way of the Hayes and Nelson rivers, lake Winnipeg and Red river. Other contingents followed in 1813-14 and -15.

Great difficulties were encountered but eventually surmounted by the determined colonists. Their inexperience in this new land, the severity of the climate, the lack of proper utensils, seed, and initial food supplies, and soon the pronounced opposition of the fur trading companies, all helped to retard the development of the colony. But the patient and courageous struggles of the settlers were in time rewarded with success, and the thriving province of Manitoba now crowns their efforts.

In 1834 the Hudson's Bay Company repurchased from the heirs of the Earl of Selkirk all the lands of the original grant, in so far as they lay in Canadian territory, and from that date the settlement became a protege of the Company. The Council of Assiniboia, which had been instituted by the Governor of the colony in 1822, was enlarged in 1835, under the immediate direction of the Governor of the Hudson's Bay Company. Four justices of the peace were appointed, a volunteer corps was formed and provision was made for the making of laws.

Steady Growth. Then began an era of slow but steady growth, marked by the usual struggle for industrial establishment and political freedom. Gradually the opposition of the fur-traders to settlement died away, and the ranks of the colonists were increased by retiring traders, French-Canadians, Half-breeds and others, who took up land and made their homes in their midst. As the settlement increased in numbers and prosperity, the agitation for a more suitable form of government—the status of a Crown colony or for annexation to Canada—grew tense. In short, the reign of the fur company was being outgrown, and a change was inevitable.

Finally in 1868, steps were taken for the extension of the Dominion of Canada to include Rupert's Land and the North-western Territory. An agreement was reached the following year, by which the Hudson's Bay Company surrendered to the Imperial Government its claims to these areas.

Manitoba: Statistical Record of Growth

AREA

	13,928 SQ. MLS.
1870.....	■
	73,732 SQ. MLS.
1881.....	■
	251,832 SQ. MLS.
1912.....	■

STEAM RAILWAYS

	164 MILES
1880.....	■
	1287 MILES
1890.....	■
	1783 MILES
1900.....	■
	3221 MILES
1910.....	■
	4500 MILES
1920.....	■
	4600 MILES
1930.....	■

MANUFACTURES

VALUE OF PRODUCTS
\$3,413,000

1880.....	■
	\$10,155,000
1890.....	■
	\$12,927,000
1900.....	■
	\$53,674,000
1910.....	■
	\$158,222,000
1920.....	■
	\$159,435,000
1928.....	■

POPULATION

	25,228
1871.....	■
	62,260
1881.....	■
	152,506
1891.....	■
	255,211
1901.....	■
	461,394
1911.....	■
	610,118
1921.....	■
	EST. 663,200
1929.....	■

TELEPHONES

1880.....	VERY FEW
	14,042
1907.....	■
	45,281
1913.....	■
	65,845
1920.....	■
	APPR. 70,000
1930.....	■

HYDRO-ELECTRIC DEVELOPMENT

1905.....	1,000 HP
	38,800 HP
1910.....	■
	78,850 HP
1915.....	■
	85,325 HP
1920.....	■
	183,925 HP
1925.....	■
	311,925 HP
1930.....	■

PROVINCIAL DEVELOPMENT

The first step towards making the Red River Settlement and the great western plains a part of the Dominion of Canada was accomplished in 1869. In accordance with the terms of the agreement the Hudson's Bay Company reserved certain portions of land in the vicinity of its trading posts, and one-twentieth of each township settled within the fertile belt. Titles to lands already conferred by the Company were to be confirmed. For Rupert's Land and the Northwestern Territory Canada agreed to pay Great Britain the sum of £300,000.

Half-breed Rebellion. Unfortunately these negotiations were not clearly understood or appreciated by the Half-breeds, who constituted the largest proportion of the population. They supposed that the transfer signified the forfeiture of their lands. Under the leadership of Louis Riel they rebelled in 1869, and attempted to set up a Provisional Government. Fort Garry was seized and utilized as headquarters for a time. On the arrival of a military expedition from the East in 1870, the insurgent leaders fled and further opposition was not attempted.

The Northwest Territories of Canada, as a political unit, came into existence on July 15, 1870, when by an Imperial Order-in-Council dated June 23, Great Britain transferred to the recently confederated Dominion her adjacent areas known as Rupert's Land and the Northwestern Territory. On the same date the Province of Manitoba was created by the Canadian Parliament and admitted into confederation. It included the Red River Settlement, and a Lieutenant-Governor was appointed to establish a system of Provincial Government. The Lieutenant-Governor of Manitoba was made Lieutenant-Governor of the Northwest Territories also from year to year for a period of five years.

Government Organized. The organization of a Provincial Government was a task requiring infinite patience and studied diplomacy. The scattered community forming the nucleus of the province had heretofore been unaccustomed to even the most elementary forms of responsible government. Moreover, the population was split up into factions widely at variance in racial origin and religious views and with tempers set on edge by recent strife and disorder. The Manitoba Act, creating the province, provided for a Lieutenant-Governor,

who should be appointed by the Federal Government, an Elective Legislative Assembly of 24 members, and a Legislative Council or Upper House of 7 members. This Upper House was abolished in 1876.

One of the first tasks confronting the Provincial Government was the assignment of land to the settlers and its proper delineation on the ground. The terms of settlement with the Hudson's Bay Company provided for the confirmation of titles to all lands granted by it. The Dominion Government further stipulated that a total area of 1,400,000 acres should be set apart for the Half-breeds, and agreed to recognize settlement made in advance of government surveys. French-Canadian settlers on the Red and Assiniboine rivers had introduced the system of land holdings prevailing in Quebec, resulting in a series of long narrow lots fronting on these rivers and with provision for common pasturage in the rear. A Dominion Land Agent was sent to Fort Garry in 1871, and a rush for land was soon under way. Surveyors were put in the field and the block system of township surveys was introduced.

Initial Development. To the new Provincial Government fell the responsibility of providing roads, bridges and other improvements for the settlers, establishing schools, maintaining law and order, and generally carrying out the administration of local affairs. The Dominion at large retained possession of the natural resources in lieu of which the province was allowed a yearly subsidy in cash. Land-seekers began arriving in ever-increasing numbers, and when the fertility of the Red River prairies and the possibilities of agriculture were better realized, an era of agricultural development began. As the fur trade waned and the buffalo disappeared before the approach of civilization, the importance of securing produce from the land grew in proportion.

Early Communications. A stage line between Fort Garry and St. Paul was inaugurated in 1871. A telegraph line was built the same year to connect Winnipeg with the United States at Pembina, and in 1872 commercial steamboats on the Red river heralded the disappearance of the cart-caravans. Railway service was secured in 1878, when a line was completed from St. Boniface to Emerson, where it met the St. Paul and Pacific railway. For a time the St. Paul route superseded both

the Hudson Bay and the la Verendrye routes to the Red River valley. Meanwhile the Canadian Pacific railway was being built and the first transcontinental train passed through Winnipeg in 1886. With the building of the Canadian Pacific railway Manitoba witnessed a boom of wildest proportions. It reached its height in the winter of 1881-82 and exploded in the following spring. The abnormal growth of boom days was followed by years of depression, since when a steady, healthy growth has prevailed.

Milestones of Progress. It is impossible, in the compass of these pages, to even outline Manitoba's political history during the sixty years of its provincial life. A few of its outstanding milestones of progress are its successive enlargements of boundaries; its rapid growth of population; its development in agriculture, commerce, manufacturing, and finally in mining; and its leadership in Western Canadian development. During the Great War of 1914-18 it responded in no uncertain manner to the call of the Empire. With the acquisition of its natural resources on the anniversary of its sixtieth birthday it reached full provincial maturity.

CHAPTER III

THE PEOPLE

ABORIGINES

The territory now occupied by Manitoba was inhabited originally by a few Eskimos and various bands of North American Indians. Descendants of these aborigines are found to-day in widely scattered locations throughout the province. The Eskimos still lead nomadic lives, but the Indians are found on various reserves as wards of the Canadian Government.

Roughly the aborigines were as follows. In the region of Churchill on the shores of Hudson bay were a few Eskimos who did not wander inland. Throughout the remainder of the territory, with the exception of a small area in the southwest, were Indians of the Ojibwa and Cree races, which are of Algonkin stock. A limited number of Chipewyans, of Athapascan stock, hunted in the northern part, tributary to the Churchill river. In the extreme southwest, the Sioux and the Assiniboine ranged.

The natives, with perhaps the exception of the Sioux, readily made friends with the White man, and it is a matter of considerable satisfaction that the passing of Manitoba from the sway of the Indian to the possession of the British was accomplished with a minimum of friction. It is to the credit of the early explorers, traders and colonizers that their humane and diplomatic treatment of the natives made this possible.

Traders in large numbers chose wives from this native population. The offspring of these mixed unions soon became quite numerous, and in 1870 their numbers in the newly created province were estimated at nearly ten thousand. In connection with the transfer of lands from the Hudson's Bay Company to Canada, these Half-breeds and not the Indians were responsible for the Red River Rebellion of 1869.

Indian Reserves. The following Indian agencies are included in the province of Manitoba: Fisher River, Clandeboye, Norway House, Griswold, Portage la Prairie, Manitowapah, The Pas, and Birtle. The reserves in Manitoba suitable for extensive agriculture are mainly within the Birtle, Griswold, Fisher River and Portage la Prairie agencies. Though somewhat

adverse to changing their mode of living, many Indians have successfully taken up farming. There has been a most gratifying increase in agricultural pursuits in recent years.

In the northern agencies the occupations are mostly hunting and trapping, though fishing is becoming more popular. The northern Indians are nearly all expert canoemen and guides, and many find employment with the fur and mining companies, surveyors and travellers.

In the southern parts of the province many of the younger Indians find employment as day labourers. The women derive some revenue from the sale of plain and fancy moose-hide moccasins and gauntlets, birch-bark and willow baskets and other articles, in the making of which they exhibit considerable skill.

The annual report of the Department of Indian Affairs for the year ending March 31, 1929, gives the total income of the Indians of Manitoba as \$855,943, made up as follows:—Value of farm products, including hay, \$195,079; value of beef sold, also that used as food, \$30,105; wages earned, \$165,100; received from land rentals, \$1,528; received from timber, \$406; earned by fishing, \$88,570; earned by hunting and trapping,



Souris River at Souris

\$254,546; earned by other industries and occupations, \$44,575; annuities paid and interest on Indian trust funds, \$76,034.

The Indians of Manitoba are practically self-supporting and are quite law-abiding. They are very loyal and many voluntarily served in the Canadian forces during the Great War of 1914-18. Their numbers in 1929, according to the Department of Indian Affairs, were 12,263.

EARLY SETTLERS

The fur-traders made no attempt to colonize. In the first place permanent settlement was considered detrimental to their interests. The coming of civilization would mean the curtailment of the fur business and it was the desire of the traders to maintain their holdings as vast fur preserves. In the second place—and the traders may be given credit for being perfectly honest in their belief—the country itself was not considered suitable for settlement.

The Half-breeds. The term "Half-breed" as generally applied is not used in its strict sense, but refers broadly to persons of sufficient Indian blood to be barred from the white class and with enough white blood to be distinguished from Indians. Many have amalgamated with the Whites, and prominent families who can trace Indian blood in their veins are not rare. The Half-breeds rapidly increased, until they exceeded the combined population of Whites and Indians. They fell into two classes, those of English-speaking descent and those of French, the latter being the more numerous on the Red river.

The Selkirk Settlers. The Selkirk settlers, arriving in four contingents between 1811 and 1815, numbered about 300, including women and children. They were mostly from the highlands of Scotland and the north of Ireland. Their numbers were augmented by colonists from Switzerland in 1818, and by many French-Canadians who joined the settlement. After the amalgamation of the rival fur companies, the various classes of people gradually settled down on the Red and the Assiniboine rivers in little groups, with Fort Garry as the centre.

Scottish settlers and the retired traders were gathered on the west bank of Red river at Kildonan; the French, the De Meurons, the Swiss, and many Half-breeds located across the

river at St. Boniface; while for a time the main settlement of the Half-breeds was at White Horse plains, up the Assiniboine. The total numbers of settlers in 1823 is said to have been about 1,500.

For many years there was little change. Following a disastrous overflow of the Red river in 1826, the Swiss moved south to United States territory. The number of retired fur-traders was considerably increased and the Half-breed population grew apace. The settling of adjacent United States territory and the great buffalo hunts on the Canadian plain attracted numbers of pioneers to the settlement. The population at the establishing of the province in 1870 has been variously estimated at between 12,000 and 25,000.



Scene on Dominion Government Experimental Farm near Brandon

LATER IMMIGRATION

The growth of Manitoba's population during the past sixty years has been phenomenal. Access to the colony was made easier by steamboat and railway services, first by connection with St. Paul in 1878, and then by the opening of the Canadian Pacific railway in 1885. With the setting up of the new province there came a great rush of settlers.

Increase of Population. The Dominion census of 1871 credited Manitoba with a population of 25,228; that of 1881 showed 62,260; that of 1891 enumerated 152,506, and that of 1901 accounted for 255,211. The quinquennial census of the Prairie Provinces in 1916 showed a population in Manitoba of 553,860, an increase of over 100 per cent in five years. In 1921, in spite of the recent war drain, there were 610,118 people in the province and in 1926 there were 639,056. Estimates for the year 1930 run from 750,000 up.

Many of the early settlers came from Ontario, and took up land in the Pembina Mountain district.

In 1875 a colony of Mennonites was allotted two reserves, where community farming was practised for some fifteen years. In 1876 a party of 250 Icelanders settled on the shores of lake Winnipeg, about sixty miles from Winnipeg, and established an important fishing industry.

The Canadian Pacific railway opened its lands for settlement at \$2.50 per acre and foreign-born immigrants were obtained in large numbers including Mennonites, Icelanders, Hungarians, Danes, Germans, Moravians and Ukrainians.

PRESENT POPULATION

The last official figures for the population of Manitoba, available at the time of writing, are those of 1926 which show a total of 639,056 for the province. On June 1, 1931, there will be made another ten-yearly census of Canada, following which the population of Manitoba at that date will be made known. In the meantime various municipalities have made counts of their own people and the results have shown on the aggregate, satisfactory gains.

The population of the city of Winnipeg in 1930, according to the Municipal assessment records, was 209,286. Greater Winnipeg, which includes the cities of Winnipeg and St. Boniface, the towns of Transcona and Tuxedo, and the municipalities of St. Vital, Fort Garry, St. James, West Kildonan and East Kildonan, is credited by the Industrial Development Board of Manitoba with a population in 1930 of 342,929. The Board's estimate for the same area in 1926 was 285,490, so that the four years' increase, according to these estimates, is 57,439, or a little over 20 per cent.

Rural and Urban Population. Manitoba began its career with a population almost entirely rural. Until about the year 1900 its growth was mainly an agricultural one. The census of 1901 indicated a rural population of 72.4 per cent. Then came a period of commercial and industrial activity, and in 1911 the ratios had changed to 56.6 per cent rural and 43.4 per cent urban. In 1921 a slight increase in favour of the rural population was shown, and in 1926 the proportions were practically the same as in 1911.

Manitoba's population is still largely centred around its original settlements. Winnipeg is its only large city. Within an area of 52.4 square miles, comprising Greater Winnipeg, probably more than one-third, and possibly two-fifths of the entire inhabitants of the province are to be found. A wider distribution of population is gradually under way, however, as mining and other developments are taking place in the northern and eastern parts of the province.



Scene on Reed Lake, Northern Manitoba

British Predominate. The British races predominate in the entire province in the ratio of nearly 6 to 4. In Winnipeg they constitute 69 per cent of the population, and in Brandon, 80 per cent. The French predominate in St. Boniface. Together, the British and French races in Manitoba comprise 62.3 per cent of the population. Canada is essentially a country of these two peoples, who accounted in 1921 for 83.3 per cent of its

population. Adding to this 62.3 per cent such other peoples as readily assimilate—German, Belgian, Danish, Dutch, Icelandic, Norwegian and Swedish in particular—gives Manitoba a total of over 78 per cent of population about which no uneasiness need be felt as regards assimilation, and, as for the remainder, it is evident that no serious obstacle as regards racial origin exists. It is rather a matter of education.

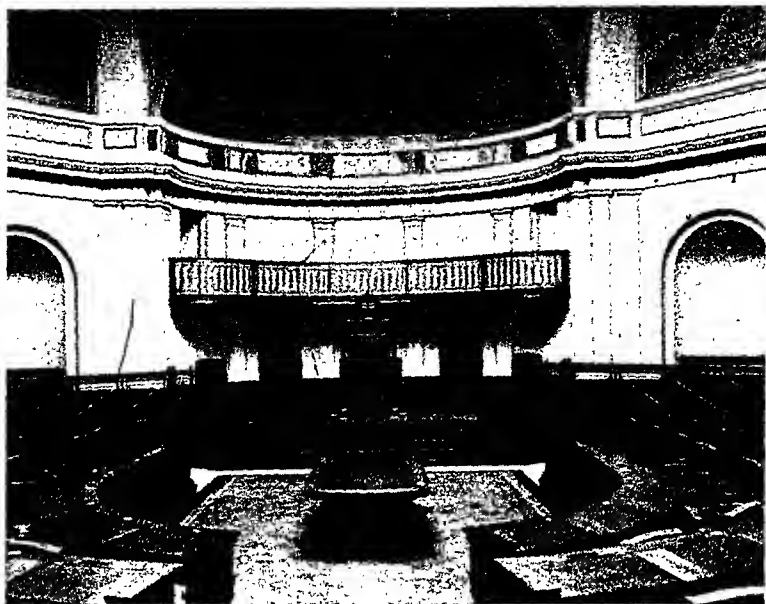
It is not to be expected that much can be accomplished with the older people who come from the backward districts of European countries. They cannot readily break away from fixed habits, traditional customs and hereditary beliefs, and adapt themselves to new conditions. But in the rising generation, assimilation must be sought and that through the medium of the school-room. Here the children are taught, not merely the elements of letters, but the real meaning of citizenship. They learn to read and write and speak English, they receive instruction in sanitation, domestic science, agriculture and manual training. But they also learn to love and appreciate the country that is lifting them above the conditions in which their fathers lived, and to realize the advantages and responsibilities of citizenship and the privilege that is theirs to be good Canadians.

GOVERNMENT

Canada is a self-governing dominion of the British Empire. The Government of Canada is modelled after that of Great Britain, where nominally the Sovereign rules, but in reality the Government of the country is controlled by the elected representatives of the people. To represent the Crown in Canada, the Sovereign, on the advice of his Government (which gives its advice only after consulting the Dominion Government), appoints a Governor-General.

The Canadian Parliament consists of two houses, the Senate and the House of Commons. The members of the Senate are chosen for life by the Governor-General on the advice of his Ministers. The members of the Commons are elected by the people every five years, or at shorter intervals should Parliament for any reason be dissolved within that time. In practice the life of a parliament of Canada rarely extends beyond four years.

12 The membership of the Senate is fixed at 96, of which 6 now represent Manitoba. Each province has representation in the House of Commons in proportion to its population. Quebec, with a fixed representation of 65, determines the unit of population by which the representation of the other provinces is fixed from time to time following the taking of the country's census. In the general election of 1930, Manitoba's allotment of members was 17 out of a total of 235 for the whole of Canada.



Manitoba Legislative Chamber

Provincial Government. Each province has a Government formed along lines similar to that of the Dominion Government. At the head is a Lieutenant-Governor appointed by the Dominion Government for a term of five years. His duties in the province correspond to those of the Governor-General in the Dominion. Though nominally head of the province's affairs, he acts only on the advice of his Ministers. It is his duty, however, to veto any act which in his opinion might be detrimental to the interests of the Dominion at large. In the majority of the provinces there is one legislative body only, elected by the people, and called the Legislative Assembly.

In each province the Lieutenant-Governor calls upon the leader of the party having a majority of supporters in the Assembly, to form an Executive Council, the leader being the Premier. This Council, subject to certain restrictions and responsibilities, carries on the business of the province. The Legislative Assembly of Manitoba now consists of fifty-five members. The Executive Council consists of the Premier and seven other members.

Provincial Jurisdiction. The Government of each province has control of legislation and matters especially of a local nature affecting the province, while the Federal Government controls matters of a wider nature, in accordance with the provisions of the British North America Act. The legislature of each province may exclusively make laws relating to education within the province. There are also certain subjects, such as agriculture and immigration, over which both the Dominion and the Provincial Governments have jurisdiction; but, in case the law passed by the province does not agree with that passed by the Dominion, the latter governs. Any law passed by the Provincial Government may be disallowed by the Dominion Government within one year after the receipt of an official copy of the Act. This, however, seldom occurs, except when the Act is one that interferes with the general welfare of Canada or the Empire.

Municipal Government. Following out the basic principle of self-government, the Provincial Government grants to local bodies of residents the rights to manage their own affairs as they desire, restricted only in so far as necessary for the well-being of the province at large. These units receive municipal incorporation from the Provincial Government and are under the special care of a Municipal Commissioner. They elect their own officers, fix their assessment and tax rate, raise and spend money, make by-laws, and generally look to their own advancement and welfare under several provincial and federal regulations. In 1930, Manitoba had 4 incorporated cities, 30 incorporated towns, 22 incorporated villages, and 120 rural municipalities.

Judicial System. The divisions of the judicial system in Manitoba are as follows: (1) the Court of Appeal, (2) the

Court of King's Bench, (3) County Courts, (4) Surrogate Courts, and (5) Minor Courts.

The Court of Appeal consists of a chief justice and four puisne judges, who are also ex officio judges of the Court of King's Bench. The Court as at present constituted has existed since 1906, prior to which date the judges of the Court of King's Bench sitting en banc exercised jurisdiction as a Court of Appeal.

The Court of King's Bench consists of a chief justice styled the "Chief Justice of the Court of King's Bench," and five puisne judges. This court possesses all the powers and authorities of jurisdiction in civil and criminal matters as are vested by the laws of England in a supreme court. Its practice and procedure are practically those prevailing in England at the present day. It also exercises the jurisdiction and powers of the Court of Chancery in England in respect to many matters. Criminal jurisdiction is exercised under the provisions of the Criminal Code of Canada.

County courts are provided in various judicial districts, of which there are at present six, namely, Eastern, Western, Central, Southern, Northern, and Dauphin Judicial Districts. One or more judges may be appointed for each county court or judicial division.

A Surrogate Court is provided in each judicial district, of which the senior county court judge is ex officio judge. Other offices are the surrogate registrar and the surrogate clerk, respectively. These courts have jurisdiction in all matters relating to the probate of wills and letters of administration and have practically the same powers as the Court of King's Bench sitting as a court of probate.

Minor courts include all those of inferior jurisdiction presided over by stipendiary magistrates, police magistrates and justices of the peace.

Citizenship and Franchise. A person must be a British subject in order to hold public office in Canada, whether under Dominion, Provincial or Municipal Governments, or to vote in any election or to obtain a deed for a homestead.

Militia and Police. The military, naval and air services of Canada as well as the Royal Canadian Mounted Police are under the control of the Federal Government. Units of the military service, however, both permanent and non-permanent,

are located in the several provinces of the Dominion and the naval service on the Atlantic and the Pacific seaboard. The air service is but a comparatively new branch of defence. Until recently the Royal Canadian Mounted Police were known as the Royal Northwest Mounted Police, and their territory was restricted to the western and northern parts of Canada. Now they have certain jurisdiction in the whole Dominion, with headquarters at Ottawa.

In addition to representatives of these national forces, the province itself maintains a force of Provincial Police and the various cities and towns have their local police departments. There are also a number of special officers, game guardians, and others whose duty it is to uphold law and order.

Military Training. Under normal conditions military training is not compulsory in Canada. The permanent militia and the naval service offer a field of enlistment for limited numbers of young men who seek careers in the profession of arms, while the non-permanent militia offers an opportunity for short annual periods of training in summer camps.

CHAPTER IV

NATURAL RESOURCES

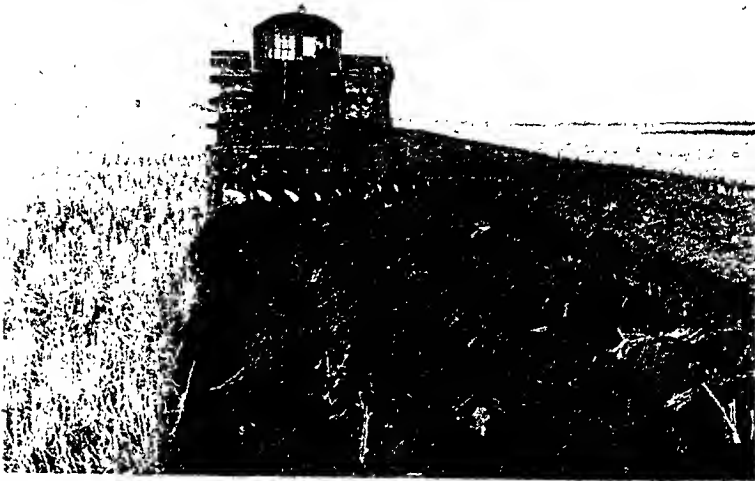
The natural resources of Manitoba may be divided into two main sections, the land resources, and the water resources. Of the total area of the province about twenty-three twenty-fifths is land and about two twenty-fifths is covered by water. The land resources may be subdivided into four distinct groups, namely, the land itself, its flora, its fauna, and the minerals, exposed or buried beneath the surface. The water resources constitute two groups, namely, the water itself including the power it produces, and the various forms of aquatic life it supports.

LANDS

It has been mentioned that the greater part of the province falls within the Laurentian geological division, which is broken and rocky in its general formation and, with climatic conditions none too favourable for vegetable growth, does not offer the best of inducements for agricultural effort. On the other hand, the prairie and the lightly wooded portions situated in the southwest part of the province, and constituting the main part of the Manitoba of earlier days before its boundaries were enlarged, have the undisputed reputation of ranking with the best wheat-producing areas of the world. The renowned Red River valley lands are exceedingly fertile, conditions for intensive production are favourable, and in these and other equally valuable tracts Manitoba possesses extensive land resources of the highest quality.

Agricultural Areas. The total land area of Manitoba, in round numbers, is 150 million acres. A conservative estimate of the acreage suitable for agricultural purposes is one-sixth, or 25 million acres. This figure includes only lands where the soil, climate, precipitation, drainage facilities and other factors for successful cultivation are known to be favourable, so that under normal conditions satisfactory returns may be expected. If inferior lands, or lands capable of being reclaimed by drainage or other undertakings, were added, this estimate might be materially increased.

Production. Of the 25 million acres of potential agricultural land, a little more than one-half is now occupied, and about one-third is improved. Provincial returns for the year 1929 indicate that less than 7 million acres were actually under cultivation that year—in round numbers but one-fourth of the available area. The value of the field crops alone produced in that year are quoted as approximately 90 million dollars. Live stock production, dairy and poultry products, fruits and honey would bring the total value of farm products up to a considerably higher figure. With the whole of its arable lands under cultivation, and with more intensified methods of cultivation, Manitoba could produce stupendous quantities of food and other supplies.



Plowing by Tractor in Manitoba

Broken and Rocky Areas. Of the remaining five-sixths of the land area there is practically not an acre without some real value. Extensive tracts of rugged and rocky formation, of low irregular hills whose summits and slopes are denuded or partly denuded of soil and whose ranges are interspersed by valleys of swamp and muskeg, not infrequently containing small lakes, though unfit for agricultural purposes, carry a tree growth of considerable value. Even when the forest covering ceases to be of direct worth it has an indirect value in the pro-

tection it affords to the many species of valuable wild life prevailing. This territory is by no means waste, and it offers great possibilities in the development of commercial forestry and in wild life conservation. It is rich also in minerals.

Swamp Lands. Manitoba possesses extensive swamp lands, and many projects have been put forth for their reclamation. Once drained, they add materially to the productive area, as their fertility is great. In the meantime they produce considerable fur, being favourite haunts of the muskrat particularly. They might be utilized to great advantage in the commercial farming of this rodent, or as shooting preserves. Large areas of swamp lands have already been set aside as game preserves, and the wild life resources of the province are thus being increased. Even the so-called "barren lands" of Northern Canada, which encroach upon the extreme northern part of Manitoba, have been proved to be far from barren. Though devoid of trees they are covered by moss, grass and other vegetation, which supports the countless thousands of caribou that inhabit these regions. The caribou is closely allied to the European reindeer, and projects for the introduction of semi-domesticated reindeer to northern Manitoba are under way.

From the standpoint of the possibility of making the land produce the necessities of life, there is practically no waste, barren or desert area in Manitoba. On the contrary, much of it must be classed with the richest of the world. The application of science to agriculture has made possible the utilization of dormant resources heretofore not recognized. Lands that formerly produced so-called "big crops" are being made to return bigger and better yields. So-called "worthless lands" are improved and made to produce their quota. Seeds are being propagated that produce variations in plants, making their growth more feasible under existing conditions. The range of species as well as the area of their production is being enlarged from year to year. Modern agriculturists, horticulturists and foresters are not content to sit back and let nature take its course, but by the application of increased knowledge stimulate the production of the land.

Disposal of Crown Lands. With the transfer of the Crown lands of Manitoba on July 15, 1930, from Federal to Provincial ownership, the old homestead regulations, by which

a settler was enabled to secure a free quarter section of land on payment of a small recording fee, and the performance of certain residence and improvement duties, were done away with. There are no longer available any free homestead lands in Manitoba. Crown lands deemed suitable for farming purposes and being located within economic distance of railways or markets are offered for sale, at the discretion of the Minister of Mines and Natural Resources, at reasonable prices and on easy terms.

Announcements have been made by provincial officers in charge of Crown lands that the policy of land settlement now favoured is one by which more intensive settlement in sparsely settled districts having some advantages of transportation and public utilities will be encouraged, rather than the settlement of new areas remote from such beginnings, which will not be opened up in advance of general development. Much good Crown land is still available by purchase in districts already having many pioneer advantages such as roads, schools, telephones and medical service.

FORESTS

Manitoba is usually referred to as a "prairie" province, but as a matter of fact over 75 per cent of its land is wooded. The forests have suffered severely from the ravages of fire, but they nevertheless constitute a resource of no mean degree, which, if scientifically developed and conserved, will render the appellation "forest" as applicable as "prairie" to this province.

The forests of Manitoba are much less diversified than in Eastern Canada, and the number of both deciduous and coniferous species is limited. The arborescent flora includes only some 30 species and of these only 6 or 7 are of sufficient size or number to be of commercial importance. Aspen, spruce and jack pine are the predominating species, and form over 90 per cent of the stand. Paper birch, tamarack, and balsam fir are of secondary importance. In the southern part of the province there are a few of the eastern hardwoods, such as ash, basswood, elm and bur oak. White and red pine and white cedar extend across the boundary from Ontario.

Spruce, of which there are two species, white and black, is undoubtedly the most valuable wood. It makes excellent

mark on original

lumber for general construction purposes, being light, strong and easily worked. In addition it is the most valuable wood for the manufacture of paper. White spruce, which is found on the better drained lands, grows to a fair size, 18 to 24 inches in diameter. Trees up to 36 inches in diameter have been found on the shores of Reed lake. Jack pine, which is usually found on sandy ridges, following fires, is valuable for railway ties as well as for lumber and fuel. It is also used in the pulp and paper industry for the manufacture of kraft paper.

Poplar, though used to some extent for lumber, is at present chiefly used for fuel, and the value of this supply of firewood to the settlers on the adjacent prairies is very great. Though as yet not utilized extensively in Canada for paper, it is an important wood in the manufacture of book and writing paper. Balsam fir is used for lumber and pulp. The tamarack for the most part is small and is used largely for railway ties, posts and poles. It is also a good fuel wood. Cedar, where found, is in great demand for fence posts and poles, owing to its lasting qualities. Paper birch is a good fuelwood and can be used also for the manufacture of furniture and the many purposes on the farm where hardwood is required. The other species, though valuable where they can be obtained, are limited in quantity and distribution.

Forest Areas. The extensive forest surveys conducted in Manitoba indicate that, in an area of 213,232 square miles of non-agricultural lands, 7,500 square miles bear timber of merchantable size, 19,000 square miles bear young growth of future possibilities, while the remainder of the area is occupied by sub-arctic forest of no commercial possibilities (95,932 square miles), bare rock and open swamp (41,700 square miles), stagnated growth (23,000 square miles) and water (26,100 square miles). The principal areas of merchantable timber are found adjacent to the Winnipeg group of lakes, in the Saskatchewan valley, and in the upper part of the area drained directly by the Nelson river.

Forest Resources. The amount of saw timber in Manitoba is estimated at 900,000,000 board feet of spruce, 100,000,000 board feet of jack pine, and 100,000,000 board feet of poplar. There are 27,250,000 cords of smaller material, comprising 7,000,000 cords of spruce, 5,000,000 cords of jack pine, 15,000,000

cords of poplar and 250,000 cords of white birch. The total stand is estimated at 3,430,000,000 cubic feet.

Lumber Production. Manitoba's production of lumber in recent years has amounted to about \$2,000,000 in value annually. Spruce accounts for about 97 per cent of the cut, jack pine to less than 2 per cent and poplar, tamarack and balsam fir to less than one per cent each. Many of the logs sawn in Manitoba mills are cut in northern Saskatchewan and driven down rivers.



Forest Scene in Northern Manitoba

Manitoba manufactures a comparatively small amount of lath and practically no shingles. Considerable quantities of wood are cut by settlers for building purposes and as fence posts, poles, railway ties and cordwood, and in recent years, as pulp wood.

There are very few large sawmills in the province, but a number of smaller ones, including the portable variety, are scattered throughout the wooded areas convenient to settlement.

Pulp and Paper Mill. Manitoba's only pulp and paper mill is that of the Manitoba Paper Company Limited at Pine Falls on Winnipeg river. It commenced shipping paper in 1927 thus introducing a new industry into the province. Its capacity is 250 tons of newsprint per day. About 70 per cent of its pulp is made by the ground process and the remainder by the sulphite process. Paper from this mill is supplied to the Manitoba Free Press and surplus quantities are exported. Hydro-electric power is secured from the Great Falls plant of the Manitoba Power Company though it may later be derived from sites on the river much nearer. Pulp wood is purchased at present, though the Company has extensive holdings. An attractive company-owned town has been built at Pine Falls in connection with this industry.

Manitoba Forest Reserves. Realizing the importance of maintaining a supply of wood for the people of this province and the beneficial effect of the forests in the conservation of the water supply, the amelioration of climatic extremes and the pleasure and health of the people, the Dominion Government established a number of national forests in Manitoba on lands which, though not suitable for profitable agricultural development, are capable under proper management of producing large quantities of wood. Settlement was excluded from these areas, but the resources in timber and grazing and the recreational facilities for hunting, fishing and camping were thrown open for the fullest use of the people, commensurate with the maintenance of the productiveness of the forest. Mature timber was sold under regulations requiring careful logging and the disposal of slash, and every year thousands of settlers came to these forests for their supplies of fuelwood, fence posts, poles and building material. Permits to cut this timber were granted to settlers either free or for a small stumpage charge. A regular system of patrol by forest rangers afforded protection from fire.

When the natural resources were transferred from Federal to Provincial jurisdiction all but one of these forest reserves became the property of Manitoba. The Dominion Government retained the Riding Mountain Forest Reserve and has since converted it into the Riding Mountain National Park.

The Forest Reserves turned over to Manitoba are five in number and have a combined area of 2,757.5 square miles.

Their names and areas are:—Sandilands, 187.75 square miles; Turtle Mountain, 109.25; Spruce Woods, 223.50; Duck Mountain No. 1, 1,462.25; and Porcupine No. 1, 774.75 square miles.

Tree Planting. The Dominion Forestry Service maintains nurseries at Indian Head and Sutherland, Saskatchewan, where millions of young trees are grown annually and distributed free of charge to farmers throughout the prairies for the establishment of shelterbelts and woodlots. The Manitoba Government maintains a small nursery on each of its forest reserves for the supplying of stock for planting on these reserves, but not for general distribution.

Forestry Possibilities. The value of the forest resources of Manitoba should not be reckoned as they exist today but rather on the basis of their possible development. Unlike a mineral resource, which, when mined, is gone forever, forests can be grown as a continuous crop. By a far-seeing and scientific commercial forestry policy the non-agricultural areas of Manitoba may be developed into areas of great productiveness and much revenue.

MINERALS

It is now apparent that Manitoba's mineral resources are both varied and extensive, though no one can yet hazard an estimate of their value. The extension of boundaries in 1912 gave the province a huge area of the Canadian Precambrian, which has been found elsewhere to contain great storehouses of mineral wealth. It is being demonstrated day by day that this wealth extends into Manitoba. The non-metallic resources of the province are in themselves also a great asset.

Following is a very brief review of the known mineral resources of all kinds, arranged alphabetically for convenience of reference. The information is largely drawn from the First Annual Report on Mines and Minerals, issued by the new Department of Mines and Natural Resources of the Manitoba Government. Officers of the Mines Branch of this Department and of the Department of Geology of the University of Manitoba made a recent field check of large and small mineral occurrences and their findings have been embodied in this report. A brief review of the development of Manitoba's mining industry is





contained in the chapter devoted to industries (Ch. VII, Industries).

Amber. An occurrence of hydrocarbon of the amber family on the shore of Cedar lake near Chemahawin presents commercial possibilities in the recovery of a product of value in the paint and varnish industry. Though a few large lumps have been found, most of the deposit occurs in the form of small pieces mixed with beach material, and the problem of separation would have to be solved before operations could be successfully carried on. Chemahawinite has been found also in some of the bays at the south end of Moose lake.

Antimony. Stibnite, the sulphide of antimony, has been found in association with quartz and calcite near the west end of Oxford lake. Several hundred pounds of pure stibnite have been cobbled from the ore and it is possible that commercial quantities may be found in that vicinity. Other occurrences have been discovered in quartz veins on the east side of Wekusko lake; and it is thought that part of a deposit of gray copper ore reported from north of Wanipigow river may consist of tetrahydride, the antimony bearing variety.

Arsenic. Arsenopyrite is the only arsenic bearing mineral known to occur prominently in Manitoba. It has been found in gold quartz veins and other mineralized rocks in the Wekusko Lake district, in a number of places about West Hawk and Star lakes, in the areas near Winnipeg river and Oiseau river, and in the English Brook district. No commercial development for the recovery of arsenic has taken place yet though the West Hawk areas have received preliminary attention.

Beryllium. This metal, also called glucinum, is contained in the rare mineral berl. It is very light and very hard. The pure metal is malleable and can be worked cold. It has been found to possess qualities that make it very valuable in alloys. Consequently there is likely to be an increasing demand for it and the Manitoba deposits, which are among the best known, may be mined for its recovery.

Berl has been found in several places in southeastern Manitoba in pegmatite dykes. One of the most promising prospects is on the Winnipeg river about 12 miles above Point du Bois. No deposit has yet been found of sufficient extent or

value to be worked in itself but quantities might be recovered as by-products if the dykes are worked for other minerals.

Bismuth. Occurrences of bismuth, the native metal, and bismuthinite, the sulphide, have been recorded from the vicinity of Star lake, in the southeastern part of the province. Other traces of the metal have been noted near Cat lake, north of Oiseau river, and in the English Brook area north of Wanipigow river.

Cement. Materials for the manufacture of cement are abundant in Manitoba. Limestone and argillaceous materials required in the Portland cement industry are widespread in the southeastern part of the province, and calcareous shales of a composition suitable for the manufacture of natural cement occur in the southern part of the Manitoba escarpment.

Clay. Clays and shales suitable for the manufacture of common brick and allied clay products are widely distributed in Manitoba, particularly in the south and west. Kaolin and fire clays have not been found in commercial quantities and are thought, by geologists, to be scarce.

Coal. Seams of lignite averaging less than 3 feet in thickness occur in the Turtle Mountain district of southwestern Manitoba. The total coal of this area has been estimated to be 160 million tons.

Thin seams of lignite occur also, here and there, on the eastern slope of the Duck and Porcupine Mountains. Some coal in drift has been found in various parts of the province.

Cobalt. Traces of cobalt bloom have been reported, but no deposits of the cobalt-silver type have been discovered.

Copper. This metal is widely distributed in Manitoba. The chief occurrences are as large replacement bodies of chalcopryite, associated with pyrite and spahlerite and carrying values in gold and silver. The extensive Mandy, Flin Flon and Sherritt-Gordon ore bodies in the northern part of the province are of this type. Other types, carrying values in nickel and in the platinum group of metals, are found in the southeastern part of the province.

Copper prospects occur in many other parts of the province, especially in the areas about Athapapuskow, Cross, Oxford, Cranberry and Wekusko lakes. Chalcopryite is common but

other copper minerals are rare. Bornite occurs in a few localities. Gray copper ore is reported from the English Brook area.

Feldspar. Abundant resources of feldspar are present in Manitoba, particularly in the pegmatite dykes of the south-eastern part of the province.

Garnet. This mineral is common and widespread and occurs in many types of metamorphic rocks and schists.

Gas. Pockets of gas have been found in various parts of the province and in a few areas natural gas has been used for domestic purposes, but the possibilities of locating gas in large quantities are not considered, by those who have studied the geology of the province, to be favourable.

Gold. Gold is fairly widely distributed in the Precambrian area of Manitoba. The principal fields are the Central Manitoba area, between the east shore of lake Winnipeg and the Ontario border, and the Wekusko Lake area, north of the Hudson Bay railway and east of the Flin Flon copper area. Discoveries have been made also at Elbow lake, Copper lake, Oxford lake, Island lake and various other places.

Most of the gold occurs in quartz veins occupying shear zones, usually in schists but sometimes in granites. It is typically free and varies from coarse to fine in texture. Gold is found also in association with other metals. The Flin Flon and Sherritt-Gordon copper deposits carry considerable values in it.

Gravel. Extensive gravel deposits are widely distributed over the province. They occur along the Manitoba escarpment as ancient glacial lake beaches of fairly uniform texture, and east of the Red river in irregular masses and ridges alternating with sand. The pebbles are mainly granite and limestone, the percentage of limestone increasing with the distance from the eastern boundary of the province.

Gypsum. Gypsum is fairly widespread in southern Manitoba. The chief known deposit is at Gypsumville, north of lake St. Martin and between lake Winnipeg and lakes Manitoba and Winnipegosis. Other occurrences have been investigated near Dominion City, Armand, St. Elizabeth, St. Charles, Charlesworth, Leifur, Rothwell, Neepawa, Gladstone, Amaraath, and elsewhere. The Gypsumville deposits cover four and a half square miles of surface exposure.

Iron. Some types of iron deposits are known to occur in Manitoba but no commercial ores have yet been discovered. A deposit of hydrated iron oxide, evidently low-grade, occurs on Black island in lake Winnipeg. Magnetite has been observed north of Falcon lake and at Knee lake. Iron ochre, both limonite and hematite, has been found in the basins of the larger lakes of southern Manitoba and in an area north of Moose lake.



Gypsum Deposit at Gypsumville

Lead. Provincial geologists do not expect a production of lead in Manitoba, except, possibly, as a by-product of complex ores of other metals. Galena, lead sulphide, is reported fairly common in association with other metallic veins and deposits. A galena-sphalerite deposit on Little Herb lake carries fairly heavy lead values, as well as silver and some antimony, but its commercial value is not known.

Lithium. Lithium minerals are known to be present in many of the dykes of southeastern Manitoba that contain also beryl and other rare economic minerals. Occurrences have been noted in the areas near Star lake, Point du Bois, Oiseau river, Cat lake, West Hawk lake and elsewhere.

Manganese. Indications of bog manganese accompanied by limonite have been observed in low swampy land at the base of the Pembina hills. The economic possibilities of the deposit are not known.

Molybdenum. Molybdenum, in the form of the sulphide, molybdenite, occurs widely in the province. The principal known deposits are in the Falcon-Lake district in southeastern Manitoba and on Crowduck bay, Wekusko lake.

Nickel. In the vicinities of Oiseau and Maskwa rivers promising prospects of nickel have been found. It is associated with copper and members of the platinum group of metals.

Oil. Geologists do not consider the underlying rock formations of Manitoba favourable as reservoirs of oil. Several attempts at drilling have proved fruitless. The shales of the Manitoba escarpment of Cretaceous age carry a maximum of 8 to 10 gallons of oil per ton, which is not sufficient for economic distillation. It is possible, however, that pockets of oil may have accumulated from them, though as yet no discoveries of importance have been made.

Peat. Extensive peat beds occur in many of the swamp areas of eastern and northern Manitoba. One bog to the east of Whitemouth, of which the investigated area is 97,000 acres, was found to be from 11 to 12 feet deep. Over 242,000 acres of peat and litter beds have been surveyed but this is only a fraction of the total.

The vegetation of most of the peat bogs is not yet sufficiently humified for utilization in the peat industry. Many areas will be drained and recovered as agricultural land. The recovery of litter from beds along the Hudson Bay railway and its utilization for insulation purposes, either in a natural or manufactured form, offers great possibilities.

Salt. Many salt springs occur in Manitoba over an area extending from the Pasquia hills to the International boundary at Emerson. No beds of rock salt have, as yet, been found.

In a recent report on the salt industry in Canada, issued by the Federal Department of Mines, the statement is made that the brine from a well near Neepawa was the strongest encountered in Manitoba and that this well is the only one in that province which at present holds out any promise of being of

commercial importance. This view is expressed also in reports published by the Provincial Government.

A brine from a well at the Elmwood Sanatorium on the east bank of Red river is said to possess curative properties in the case of muscular ailments. It is also carbonated and used as a beverage.

Sand. Many grades of sand are found in southern Manitoba. From a ridge at Beausejour, sand was supplied for many years for a bottle-glass industry, and large quantities were shipped to a glass factory in Alberta. Soft sandstones on Elk island and Black island are considered to be good raw material for a glass industry. The Black Island sand was used in 1929 in a Winnipeg bottle factory.

Moulding sands for foundry work, sands for use in the brick and sand-lime brick industry, and sands for concrete, mortar and general purposes are found within easy reach of Winnipeg, and at other places in the province.

Silver. No deposits of silver as the chief metal are known in Manitoba but silver occurs in association with mineral deposits of other metals. It is found in the copper-zinc ores of Flin Flon and the copper ores of the Mandy and Sherritt-Gordon mines. It has been noted also in various forms with other ores on Little Herb river and in the English Brook area.

Stone. Granite, limestone, marble and sandstone are found in large quantities in various parts of Manitoba. They are used extensively for building and other purposes.

Granite and related rocks of many varieties are abundant as bedrock in Precambrian areas and as boulders in glacial drift. Some granite has been quarried for building purposes and some has been cut and polished for monuments.

Limestones are used almost exclusively in the various uses to which stone material is put in Manitoba. The Upper Mottled limestone, better known in all parts of Canada as Tyndall limestone, dresses into a durable and particularly attractive stone suitable for exterior or interior finish. It is quarried on a large scale at the Garson (Tyndall) quarries about 25 miles northeast of Winnipeg but is abundant over a wide area. Limestones are used extensively also for the manufacture of lime, as road material, in the making of cement, as flux in foundries, in pulp mills and otherwise.

Marble, a fine-grained limestone, has been found recently in a few localities, including a couple along the Hudson Bay railway. It takes a high polish and displays a variety of pleasing tints varying from light yellow to dark brown red.

Sandstones are found in a wide area of southern Manitoba. Most of them are too soft for building purposes though an outcrop near Boissevain provided material for local use. The Winnipeg sandstone, of which there is a notable outcrop on Black Island, in lake Winnipeg, consists almost entirely of silica, and has great commercial possibilities.



Quarrying Mottled Limestone at Garson, Manitoba

Tin. Occurrences of tin in various forms have been reported from southeastern Manitoba but no production has yet taken place.

Tungsten. A small shipment of ore from the Falcon Lake district of southeastern Manitoba yielded 177 pounds of pure scheelite, a calcium tungstate.

Evidences of tungsten bearing ores have been noted also in the Wekusko Lake area of northern Manitoba. The production of tungsten is one of the many possibilities of the complex mineral areas of Manitoba.

WATER POWERS

It has been estimated that the total potential water power resources of Manitoba exceed five million horse power. The actual development to the end of the year 1930 was less than one-tenth of this amount. Future development of these resources is bound to play an important part in the industrial life of the province.

Administration. On July 15, 1930, the water power resources of Manitoba, along with its other natural resources, were transferred from Federal to Provincial ownership and control. The administration of these resources was relinquished on that date by the Minister of the Interior in favour of the Minister of the new Manitoba Department of Mines and Natural Resources, the administration of the water powers passing particularly from the Dominion Water Power and Reclamation Service of the Federal Department to the Water Power Branch of the Provincial Department. This Branch is headed by a Director of Water Power, to whom all applications for water power privileges, or requests for information concerning water power resources, should be addressed.

The Water Power Act of Manitoba, which came into force on July 15, 1930, provides that the water powers are to remain vested in the Crown, no outright sale of them being permitted, but they may be leased to any approved licensee for a definite term of years upon certain specified conditions. Provision is made in the Act for exercising an effective measure of control over not merely the developments themselves, but also over all the auxiliary works necessary for storing and using the waters and for transmitting power, as well as the construction of the works and the management of the properties. To this end a statutory authority is established with the right of control, not only of the power site, but of all the lands, works and operations necessary for the development and use of power.

Developed Power. All the large power developments in Manitoba to date have been on the Winnipeg river. The first development was that of the Winnipeg Electric Company's plant on the Pinawa channel, completed in 1906 and operating under an average head of 40 feet, with a total installation of 37,800 horse power. This development was followed by the completion of the City of Winnipeg municipal plant at Point

du Bois in 1911. This plant operates under an average head of 46 feet with a total installation of 105,000 horse power. These developments were followed by the construction of the Great Falls development of the Manitoba Power Company, operating under an average head of 56 feet with a total installation of 168,000 horse power.

These three plants, having a combined installation of 310,800 horse power, supply hydro-electric energy transmitted over steel-tower, high-tension lines to the Greater Winnipeg industrial areas, to the Central Manitoba mining field and to the pulp and paper mill at Pine Falls. Power is supplied in blocks also to the Manitoba Power Commission and transmitted over its system of lines to a number of municipalities in southern Manitoba.

During 1930, the construction of two large additional plants on Winnipeg river was undertaken. At the Seven Sisters site, the Northwestern Power Company made rapid progress on a plant having an ultimate designed capacity of 225,000 horsepower. The City of Winnipeg Hydro-Electric System also made fast time on the construction of a plant at Slave Falls having a designed capacity of 100,000 horsepower. New transmission lines to carry the power from these plants to Winnipeg are being built.

Manitoba Power Commission. The Manitoba Power Commission was organized under the authority of the Manitoba Electrical Power and Transmission Act of 1919, which gave it power to make provision for generating electric energy, to enter into contracts for the purchase of power in bulk from generating agencies, and for its transmission and sale to municipalities and other corporations and individuals. In 1929 legislation was passed whereby the government undertook to bonus all transmission lines, substations and farm distributions to an amount not exceeding 50 per cent of the capital cost.

In 1920 the Commission constructed a 60,000-volt steel-tower transmission line from Winnipeg to Portage la Prairie, a distance of 60 miles. In 1921 it tapped this line at Oakville and extended the system south to Carman, Roland and Morden. Later extensions were made westerly from near Roland to Wawanesa and intermediate points and southerly to Boissevain and intermediate points. Further extensions, including low

tension lines to serve rural districts, have carried the system over a wide area in the southwestern part of the province.

A number of small steam plants, and a hydro-electric plant of 125 horsepower capacity at Minnedosa, serving individual municipalities, were acquired by the Commission and the steam plants are being operated by it until lines are extended to make possible the substitution of power from the general system. In 1930 the plants supplying light and power to the city of Brandon were acquired. These consist of an active steam plant in the city and a 1,000 horsepower hydro-electric plant practically abandoned and unfit for further use on the Minnedosa river about 10 miles from Brandon.

The Commission purchases the main bulk of its power from plants operating on the Winnipeg river. The power is delivered to its terminals in Winnipeg.

Sources of Power. The power resources of the Winnipeg river were among the earliest to receive detailed examination and the investigations established the fact that there was available along the Winnipeg river some 450,000 continuous 24-hour power. The power is feasible of development at nine sites, all of which form most desirable projects from both engineering and economic viewpoints. Three of these sites have been fully developed and the development of two more is nearing completion.

The other rivers flowing into lake Winnipeg from the east offer a great number of opportunities for ideal developments of small size suitable for local use and for use in the mineral areas. Similar power sites, some of which are of substantial size, are available on the western tributaries to the lake. The Saskatchewan river, entering lake Winnipeg at the north through Demi Charge, Flying Post and Grand rapids, presents exceptional opportunities of extensive and economic hydro-electric power development. Northern Manitoba is traversed by two power rivers of outstanding importance, the Nelson and the Churchill. The Nelson river receives the run-off collected by lake Winnipeg from the Saskatchewan, Dauphin, Red and Winnipeg river systems. This enormous lake area, in conjunction with lakes Winnipegosis and Manitoba, provides a magnificent natural regulation on the Nelson river discharge and make possible a development of from 2,500,000 to 4,000,000 horsepower. The

Churchill river likewise provides enormous power possibilities, while the Grass, Burntwood and other rivers throughout the northern area are rich in water power.

Power for Northern Mines. Power for the Flin Flon and Sherritt-Gordon mines in northern Manitoba is developed at the Island Falls site on Churchill river. This site is on the Saskatchewan side of the boundary line. The Whitemud Falls site on Nelson river offers opportunities for the development of a great amount of power that might be utilized in future mining or forest industries in the mid-central part of northern Manitoba, while farther east tremendous possibilities exist at Kettle rapids and at several other power sites on the Nelson river.

Power Estimate. In the following table are shown the hydraulic installations, complete and under construction, in Manitoba at the end of 1930, and the undeveloped power, according to the latest estimates of the Director of Water Power for the province.

TABLE II.—WATER POWERS OF MANITOBA, 1930

I. HYDRAULIC INSTALLATIONS. OPERATING AND UNDER CONSTRUCTION

Company or owner	River	Location of plant	Head in feet	Installed horse power
City of Winnipeg.....	Winnipeg....	Point du Bois..	46	105,000
Winnipeg Electric Company.....	"	Pinawa Channel..	40	37,800
Manitoba Power Company.....	"	Great Falls.....	56	168,000
Northwestern Power Company.....	"	Seven Sisters.....		225,000
City of Winnipeg....	"	Slave Falls.....		100,000
Total (installed 310,800, designed 325,000).....				635,800

*Designed ultimate capacity.

II. UNDEVELOPED POWER

River	Head in feet	Horse power at 80 per cent efficiency	
		Ordinary minimum power	Ordinary six-month power
Berens.....	193.5	12,567	17,938
Big Black.....	244.0	4,414	6,875
Bloodvein.....	98.0	4,100	6,670
Burntwood.....	209.0	8,800	26,405
Churchill.....	159.0	372,100	468,000
Dauphin.....	51.5	11,190	15,072
Fairford.....	8.0	1,740	2,342
Grass.....	234.8	5,131	15,380
Hayes.....	256.5	5,717	17,128
Manigotagan.....	217.0	1,276	3,390
Minnedosa.....	152.0	68	442
Mossy.....	24.5	166	430
Nelson.....	537.5	2,443,320	3,948,170
Pigeon.....	228.5	29,690	39,075
Poplar.....	93.0	3,329	5,153
Saskatchewan.....	108.0	59,000	196,300
Shell.....	10.0	21	65
Wanipigow.....	269.0	405	2,212
Waterhen.....	3,770	5,030
Winnipeg.....	55.0	60,000	150,000
	3,140.8	3,026,804	4,926,077

GAME AND FISH

The wild life of Manitoba, or more specifically the game and fur-bearing animals and game birds, constitute a natural resource of great value, the possession and administration of which is vested in the Provincial Government. For over 250 years these wild life resources have been exploited and have yielded, in meat, hides and fur, revenues of no mean value. When Manitoba was established as an infant province, the fur trade had already held sway for two centuries, representing practically the only commercial industry prior to this date and being primarily responsible for the advance of civilization into these regions. The length of the fur trade period is thus over four times that of the provincial era, and barring certain exceptions, the wild life resources are by no means exhausted.

Value of Furs. Lack of records makes it exceedingly difficult to form an accurate estimate of the commercial value

derived from the exploitation of Manitoba's wild life, but the returns for the year 1919-20, when fur was plentiful and prices were high, placed the value of the fur catch at over \$3,000,000. Those for the year 1928-29 showed a value of about \$1,300,000, exclusive of the products of fur farms. As there are now nearly 100 fur farms in Manitoba, the total yearly production of furs probably averages at least two million dollars.

Big Game. Of the big game mammals now found, or formerly prevalent, in Manitoba, may be mentioned the buffalo, moose, elk or wapiti, caribou (both barren ground and woodland), deer (white-tailed and mule), and antelope. Of these the buffalo and the antelope are extirpated in Manitoba but there are a few specimens in captivity.

Buffalo. No description of the buffalo is necessary. So recent has been its near extirpation, and so sudden its fate, that its characteristics are indelibly impressed on the minds of those who have any acquaintance with Western Canada. For ages it roamed over the prairies of Western Canada in herds of countless thousands and it was practically the sole support of the North American Indians inhabiting these regions. These majestic monsters, technically known as *Bison americanus*, were the noblest of all North American mammals. Their shaggy heads, huge shoulders and tremendous weights gave them a unique distinction and an undisputed sovereignty among the wild life of the continent.

Their slaughter was most wanton and unwarranted. The advent of the white man with his rifle made their killing easy, and later, the building of railways made possible the commercial exploitation of their hides. Buffalo were slaughtered in thousands for their hides, which were sold by the hunters for as little as one dollar each. Later, as a grim reminder of the tragedy of the extermination, great quantities of buffalo skulls and bones that lay bleaching on the prairies were gathered together and piled along the newly constructed railway sidings like cordwood. They were sold at from \$5 to \$7 a ton and shipped to American cities to be utilized in the manufacture of bone charcoal.

Moose. The moose is now the largest game animal found in Manitoba. It is the North American representative of the largest member of the deer family, and in Northern Europe and Siberia it is known as the elk. The moose is a most magnificent

mark on original

animal, the chief characteristic of which is its broad spread of wide, flat antlers, which sometimes measure from 60 to 72 inches across. The head is one of the most prized trophies of big-game hunters. The flesh is of high food value and forms the principal meat diet for many tribes of Indians. The hide is highly valued by the Indians. It is dried, smoked, tanned and utilized for moccasins, gloves and other articles of clothing. Moose are fairly abundant in Manitoba, being found chiefly in the northern and eastern sections of the province.



Male Elk, a Manitoba Big Game Animal

Elk. The wapiti (*Cervus canadensis*) or elk, as it is better known in Canada, ranks next to the moose in size, but has a more striking and handsome appearance. In earlier days it ranged extensively throughout parts of Canada and was quite abundant in Manitoba. Like the buffalo, however, it was ruthlessly slaughtered and has been extirpated from much of its original range. Its economic waste was more deplorable when it is remembered that these noble animals barely escaped

extermination merely for the sake of their teeth. Elk or wapiti are now found in restricted areas in Manitoba and it is apparent that the commendable action of the Provincial Government in establishing a closed season has resulted in saving this animal as an asset of the province. None is found now east of Manitoba. A number roam between lakes Manitoba and Dauphin and splendid herds are familiar sights now in the Riding Mountain National Park.

Caribou. Two species of caribou are found in Manitoba, the barren ground (*Rangifer arcticus*) and the woodland (*Rangifer caribou*). The caribou of Northern Canada are found to-day in herds that rival in numbers those of the buffalo of earlier days. The caribou is a comparatively small animal but its food value is important.

In their winter wanderings southwards some of the caribou of the northern regions come as far as the Saskatchewan river. They visit Reindeer lake and the country north of Churchill river in large bands, the trading posts at Du Brochet and Churchill reporting considerable business connected with their taking. Woodland caribou are found around the head of lake Winnipeg and about Cedar lake. Caribou meat is very palatable, and the hide dresses to good advantage giving, according to different processes of treatment, an excellent parchment of a fine, soft, white material of a texture similar to the chamois.

Deer. Two species of deer are fairly prevalent in Manitoba, the white-tail and the mule or jumping deer. Of these, the mule deer is the larger species and is so named because of its large mule-like ears. It is also called the jumping deer from its peculiar gait. The white-tailed deer is also known as the cotton-tail deer from the distinctive colouring of its tail and the manner in which it is used as a signal. While these deer were scarce a few years ago, the protection given them by the Game Department is reflected in their increasing numbers. The graceful prong-horned antelope, which is a characteristic of the western prairies, once inhabited the southwestern part of Manitoba. It disappeared from there many years ago, and is in danger of total extermination. Only its great range and the recent interest in its preservation keep up the hope that it may yet be saved.

Bear. The fur-bearing animals of Manitoba include a wide range of species from the bear to the ermine. Of bears, the black is fairly common in all unsettled parts of the province. An occasional polar bear is seen at Nelson or at Churchill but they are reported very scarce in this part of Hudson bay. Grizzly bears were reported by early fur traders as far east as lake Winnipeg, but are not found in Manitoba to-day. A cinnamon bear weighing 420 pounds was killed recently near the Winnipeg river.

Fur Bearers. The most important fur-bearing animals of land and water variety are the muskrat, beaver, otter, fisher, marten and mink. Of land animals there are the wolf, coyote, fox, including black, silver, cross, white and red species, lynx, wolverine, skunk, and ermine, or weasel, as it is known by its summer name.

Fur Farming. Commercial fur farming has been successfully established at many points in Manitoba. Within a few miles of Winnipeg are to be seen some of the largest and most modern silver fox and mink farms in Canada. Muskrats are raised also in large numbers. The industry has passed the experimental stage and is expanding rapidly in all parts of the province.

Game Birds. Of game birds, both land and water species are fairly well represented. Of the upland game, three favourite species of grouse are found, namely the ruffed grouse or partridge and the pinnated and sharp-tailed grouse, both known as prairie chicken. These three species of grouse, although affected by periodic fluctuations in number, are abundant enough to afford excellent sport in the good years, although conservation measures must always be carefully enforced to maintain the stock under modern conditions. The spruce grouse is found in unsettled portions of the province and the ptarmigan in the far northern part. The Hungarian partridge is making its appearance.

Wild geese, wild ducks, snipe, woodcock and yellowlegs are fairly plentiful and widely distributed and may be hunted during the fall open seasons provided by law. Swans, cranes, wood ducks, and sandpipers are protected by a close season.

Protection Afforded. Predatory animals are not protected by law. Except for these, the Game Protection Act of

Manitoba applies to all big game and fur-bearing animals and game birds, the hunting, taking or capture of which is restricted to certain seasons as defined by the Act and under certain conditions. Licences must be secured before any protected species of wild life may be molested. Certain royalties are collected on furs and certain fees for licences to hunt. The province derives an income of upwards of \$100,000 annually from these sources.

Under the Insectivorous Birds Act all insectivorous and migratory non-game birds and their nests and eggs are protected at all times. The Migratory Birds Convention Act also stipulates certain protection for migratory birds as agreed upon by the Canadian and the United States Governments. All animals and birds within the provincial game preserves are also protected from molestation.

Manitoba is also favoured with many species of beautiful and attractive song birds which add much to the enjoyment of the great out-of-doors and exercise a beneficial influence on the growing crops by their insect-eating habits.

Fish Resources. Like the wild life of the forests and plains, the fisheries of Manitoba constitute a valuable resource of a permanent character. The annual value of such products has exceeded \$1,000,000 for several years and during recent years it has exceeded \$2,000,000. The trade centres in Winnipeg, and the bulk of the produce is exported in carload lots to cities in the United States.

The fisheries of Manitoba rank among the most extensive inland fisheries in the world but the fishing industry is far from being developed to its full capacity. At present, lake Winnipeg produces half the fish caught in the province. Its close proximity to Winnipeg and ample transportation facilities both by rail and water make it a favourable field.

Fish Fauna. The fish fauna of Manitoba is also interesting, apart from its commercial value, in that it has a distinctiveness shared only with its sister Prairie Provinces. It is quite distinct from that of the Great Lakes and Eastern Canada and the contrast with that of the Pacific coast is even more marked. Though its principal commercial species are rather few in number, the varied species found cover quite a wide range. Professor E. E. Prince, when Dominion Commissioner of

Fisheries, in 1909, reported some 53 species, representing 15 families, and suggested possibilities of additional discoveries being made. He also makes the interesting statement that the fish fauna of Manitoba is in harmony with the theories of geologists as to the prehistoric stages of development of the province.

Commercial Species. The best known commercial fish of Manitoba is the whitefish. It is taken and marketed at all times of the year and has become a favourite wherever used. Pickerel is taken in greater quantities than any other commercial species. Trout is very highly prized for its delicious flavour and high food value, but it is not very abundant. Another species, highly prized by connoisseurs, is the sturgeon. It differs widely in physical characteristics and habits and is believed to have been, primarily, an anadromous ocean fish. Unfortunately, it is becoming scarce and its taking has therefore been limited considerably. These four species are considered the choicest commercial table fish of Manitoba.

Among the other species taken, gold-eyes, mullets and perch are all of excellent quality. Pike is a coarser fish though very common, and tullibee is an inferior species of whitefish. Sangers and small quantities of catfish are taken from lake Winnipeg.

Game-fish include trout, bass and other species. A number of lakes convenient of access by motor car are being stocked with bass and other game species to insure their angling attractions.

Centres of Operation. The commercial fishing industry of Manitoba is mainly confined to five districts comprising respectively lakes Winnipeg, Winnipegosis, Manitoba, Dauphin, and the lakes of the north country. Both summer and winter fishing are prosecuted on lakes Winnipeg and Winnipegosis and on the northern lakes. There is no commercial summer fishing on lakes Manitoba and Dauphin.

The principal centres of operation for summer fishing on lake Winnipeg are Selkirk, Gimli and Riverton and for winter fishing on the same lake, Riverton and Hudson. Winnipegosis is headquarters for both summer and winter fishing on lake Winnipegosis, with Mafeking sharing in the winter industry. Winter fishing on lake Manitoba is carried on from about forty

stations located on railways that parallel each side of the lake. Ochre River is the principal shipping point for fish taken from lake Dauphin. The Pas is headquarters for summer fishing in the north country, and The Pas, Flin Flon, Sherridon and other points on the Hudson Bay railway for winter fishing.

Commercial Catch of 1929. According to the Dominion Bureau of Statistics the commercial fisheries production of Manitoba for the year 1929 was valued at \$2,745,205, an increase of \$500,000 over that of 1928. Pickerel accounted for nearly \$1,000,000; whitefish for over \$600,000, and tullibee for nearly \$590,000. Nearly \$200,000 was derived from the sale of gold-eyes and over \$225,000 from that of pike.

The capital equipment of Manitoba's fishing industry is valued at approximately \$1,300,000. About 5,000 men are employed in fishing operations and during the winter months many teams of horses are engaged in hauling fish to shipping points.

Marketing of Fish. About 90 per cent of Manitoba's fish catch is shipped out of the province. Most of it goes to large cities in the United States. A little goes to Eastern Canada. The winter catch is shipped in a frozen state in 100-pound boxes. The summer catch is shipped fresh on ice. Only such quantities as the market does not readily absorb are stored in refrigerators. There is no curing of fish for export, but a little smoking for home consumption is done. Filleting plants for taking care of part of the summer catch have been established recently at Gimli and at Winnipegosis.

Fish Culture. Fish culture is being prosecuted by the Manitoba Government. Hatcheries are operated at Selkirk, Gull Harbour, Dauphin river and Winnipegosis. In a single year over two hundred and thirty million eggs, fry and older fish were distributed from the Manitoba hatcheries in surrounding water, over two hundred million being whitefish spawn and over thirty million, pickerel. The restocking of the waters where commercial fishing has been carried on for many years is an important undertaking, which, with regulations prohibiting excessive harvesting, will guarantee the permanency of the industry.

Great Potentialities. The large non-agricultural regions of Manitoba constitute an inland fisheries field of unlimited possibilities. The numerous lakes and rivers, many of which are of vast proportions, with deep, clear, cold waters, make an ideal and extensive district for the exploitation of inland-fresh-water fisheries. The rugged nature of these northern districts is favourable to such an enterprise. The broken rocky surface of the ground, with forests of spruce and birch, lend to the numerous lakes and rivers a depth and clearness of water not found in the plains. Cool and shaded in summer and sheltered in winter the waters are ideal for fish life. The numerous rapids from lake to lake keep the waters fresh and running. The forests breed insect life for fish food in summer and give shelter to the fishermen in winter.

Cold Enhances Quality. The cold waters of the north produce a fish of a firmness and flavour not found in warmer waters. Taken in winter time the fish is of exceptional quality. Winter fishing, especially for whitefish, is extensively practised. The fish are caught in nets placed below the ice. Frozen as soon as taken from the water, they are packed in wooden boxes and shipped in this condition direct to the consumer. This is a noteworthy instance where the cold climate of a Manitoba winter serves an economic purpose.

Some Whales. On Hudson bay there is but little activity, though some whaling has been done. At Nelson and at Churchill the so-called "white whales" are fairly numerous. A few seals also are found. Among the fish found is an Arctic trout which is highly prized. It centres about Churchill. In the vicinity of Port Nelson the herring or cisco is quite plentiful in certain seasons.

CHAPTER V

AGRICULTURE

Agriculture was introduced to the great plains of Western Canada by the Earl of Selkirk, who wished to procure better living conditions within the British Empire for those classes of rural dwellers, and others, who were finding their lot growing more and more serious in the old land. The difficulties encountered by his colonists have been referred to in preceding pages. Beset by dangers, hardships and discouragements, the Red River colony suffered much adversity. It blazed the way, however, for an army of agriculturists that has amply vindicated the visions of Selkirk.

THE EVOLUTION OF FARMING

The Selkirk Colony. It has been said that Selkirk's attempt at colonization was fifty years in advance of the times. True, from 1812, when his first settlers arrived at the junction of the Assiniboine and Red rivers, to 1870, when the province of Manitoba came into being, a period of 58 years, conditions were anything but favourable to the successful prosecution of agriculture on anything more than a very small scale. But prosperous conditions on the land are not brought about in a day, and to the early pioneers of Manitoba the present population owes a great debt.

Primitive Methods. The first attempts of the Selkirk colonists to cultivate the land were most primitive. Implements and seed were woefully lacking, and we are told that hoes were used to break up little garden plots in 1813. Many of the settlers had not even an elementary knowledge of farming. Their pluck and determination stood them in good stead and they were encouraged by the marvellous fertility of the soil, the luxuriant growth of natural vegetation, and the boundless expanse of virgin territory surrounding them.

In 1815 a gratifying yield of wheat was obtained from the little areas sown, enough, it is said, to provide for the wants of the few hundred settlers during the following winter. This

marked the beginning of wheat-growing in Manitoba, an industry that has made the province known throughout the entire world, and the introduction of a cereal that has become famous in every civilized land—"Manitoba Hard." The first export of wheat was made in 1876, when 857 bushels were shipped from Winnipeg to Toronto to be sold for seed as No. 1 Hard. In 1915, one hundred years after the first little crop was harvested by hand, the golden fields of Manitoba yielded nearly ninety-seven million bushels of this cereal alone, besides great quantities of other grains and farm products.

Grain-Growing Exclusively. Agriculture in Manitoba has passed through a gradual process of development and is becoming more scientific, more stable, and more intensified from year to year. When the long years of tedious pioneering were followed by a more prosperous period, grain-growing was followed almost exclusively for a time. The ease with which the prairie could be made ready for the seed, the fertility of the soil, the rapidity of vegetable growth and the abundant yields developed a zeal for grain production which obscured all other phases of agriculture.

Then followed a period when it became evident that Manitoba was not designed to be merely a great harvest field of the Empire. The importance of Winnipeg as a commercial and industrial metropolis indicated that other than agricultural interests were to play an important part in the development of the province. The discovery of extensive mineral deposits within her borders, the development of great water powers, the attention directed to the possibilities of commercial forestry, and the importance attached to the utilization of these and other resources competed with agriculture for public consideration. The grain belt steadily spread westward also, and in 1915 the adjacent new province of Saskatchewan produced a wheat crop three times that of Manitoba. As a grain-growing province, Manitoba is now surpassed in quantities produced by both Saskatchewan and Alberta.

Recent years have seen a steadily increasing diversification of Manitoba agriculture. The raising of live stock, the prosecution of dairying, the keeping of poultry and bees, the growing of vegetables and, more recently, of fruits are branches of the calling firmly established.

Difficulties Encountered. Agriculture has not attained its enviable prominence in Manitoba without struggle. Difficulties and setbacks, some of which at times seemed to threaten the very existence of the industry, have been encountered in many forms and on many occasions. The Selkirk settlers lost at least one entire crop by the devastation of grasshoppers. On one occasion the Red river overflowed its banks and drowned their grain. Autumn frosts have taken toll of immature crops. Gophers and other forms of animal life harassed the growing grains, while hail and frosts made their maturing periods full of uncertainty. Weeds have found the fertile soil very much to their liking and cut-worms have sometimes been destructive to the vegetable garden.

Stock-raising also was beset with obstacles. A certain amount of acclimatization was necessary for horses imported into Manitoba. Coyotes were widespread, and they distressed sheep flocks, and killed lambs and poultry. Added to these handicaps and far outweighing them in importance, were general pioneer conditions in which the settler suffered from lack of roads, distance from market, absence of demand for his products, difficulty of obtaining and high cost of building material, scarcity of labour, and even personal hardships and privation.

Under stress of breaking land, erecting buildings and fences, digging wells and carrying out the endless tasks incidental to converting a piece of "wild" land into a home and a farm, the farmer was forced to forgo many of the activities that more leisure time would permit. Hence, he frequently bought many articles even of food that might have been produced on his own land. In the earlier years four main causes delayed the rounding out of agriculture in Manitoba to its widest scope. The first was the economical necessity to produce those crops that could be most cheaply and quickly raised and most readily sold for cash. The second was the lack of knowledge of the possibilities of more diversified and intensified forms of farming. The third was the absence of ample markets within reach of the farm for such varied farm products, and the lack of creameries, cold storage plants and refrigerator cars. The fourth was the lack of suitable varieties of seeds.

Improved Conditions. Improved conditions are due principally to three factors. One is the so-called change of

climate. Whether the climate has actually changed is a debatable question; but a statement that local conditions have improved would express the views of all. Probably the greatest primary factors in this apparent modification of climate have been the making of artificial waterways and the improved drainage of the country which have resulted from the clearing and cultivation of the land. Damage to growing or ripening crops from late spring, or early fall frosts is largely restricted to outlying sections, and tender vegetables, corn and fruits are being successfully raised where years ago it was considered hazardous to attempt to produce anything of this nature. Then, too, varieties have been originated that have revolutionized grain-growing. By developing kinds that grow more rapidly and ripen more quickly, the dangers from early fall frosts have been largely eliminated and the grain belt has been extended.

The overcoming of obstacles has not been restricted to grain. In every branch of agriculture, horticulture and live stock raising science has been applied with equal success. The Departments of Agriculture of the Federal and Provincial Governments have done very valuable work in aiding Manitoba agriculture. Through the Manitoba College of Agriculture, the Extension Service, Experimental Farms and series of educational lectures and reports, the problems of the day are being met and solved.

Improved economic and home conditions are equally important factors in guaranteeing the success of the farm. In too many cases in the past farm life lost its incentive through uncongenial living conditions. A network of railways and improved rural highways has now eliminated the disadvantage of distance to a great extent, and has been a great factor in improving market conditions. The advent of the telephone and the radio keeps the farm in touch with current markets and the news of the day. The introduction of the automobile has still further helped the farmer and his family. Agriculture must remain the fundamental industry of Manitoba and the one offering the best inducement to those of limited means seeking a home and livelihood.

GRAIN-GROWING

Grain-growing in Manitoba has been the principal branch of agriculture for fifty years and even with the widening of mixed farming must continue to be the foundation of farming.

A Vista of Grain Fields. Ever since settlement, the fields of Manitoba have always provided an inspiring sight. From any eminence one can see farm after farm stretching away in every direction as far as the eye can carry. A quarter-section farm is one-half mile square; a half-section, which is a favourite farm area, measures one-half mile in width by one mile in length, while a section makes a farm that measures one mile on each side. At first there were scarcely any fences, but year by year, more fences are being built.

Another feature of the Manitoba landscape is the relative lack of huge barns. Manitoba has some large barns, much the same as those used in Ontario, but most Manitoba farmers build rather squatty, cheap types of stables. The unthreshed grain is never gathered into barns, and very little of the winter's feed for live stock is housed, being mostly carried into stables from stacks or eaten directly from the stack by the animals.

The general characteristic, therefore, of a typical Manitoba agricultural landscape has always been, and still is, its spaciousness. The farm buildings vary in style, comfort and appearance according to the taste and wealth of the owner; but there is the general feature of broad fields. The average size of farm in Manitoba, according to the 1926 census, is 270.6 acres. There is, of course, considerable variation in the average size in different parts of the province.

Distinctive Features. In the field the farmer drives a team, not of two horses, but of four, five, six or even more. These have been replaced or supplemented in some instances by engines of even greater capacity. The mechanical practicability of using engine-drawn machinery on the Manitoba farm is established, but from the standpoint of economy the horse is still a successful competitor. The level surface of the ground, the extensive areas of the farms and the ease with which the soil can be cultivated, have been in favour of large-scale methods of operation.

Seedtime. The work which is distinctively related to grain-growing is crowded into two busy seasons, seeding in spring-

time and harvesting and threshing in the fall. As soon as the snow disappears from the ground and the surface dries sufficiently which in Manitoba takes but a short period, the farmer rushes his seeding operations from daylight till dark. The average Manitoba soil is easily cultivated, and with large fields and machines built on a big scale the work is quickly done.

There is quite a wide range in the dates when seeding becomes general, both as between seasons and also as between parts of the province. Generally speaking, it may be said to commence some time in April.

Harvesting Scenes. After sowing, the grain then receives no further attention until it is ready to be harvested. In some years part of the wheat is cut before August 1, while in other years harvest does not begin until about August 25. The use of earlier ripening cereals is gradually advancing the date of harvesting. Harvesting operations make more help necessary; hence there were inaugurated the famous harvest excursions which railways have run almost every year from the older and more thickly settled portions of Eastern Canada. Many a resident of Manitoba first visited these western grain fields as a harvest excursionist. Four-horse binders of eight-foot cut flash their reels over the great expanses of golden grain, and from sunrise till sunset circle round and round the steadily diminishing field. Great areas of sheaves lie waiting the stookers, whose duty it is to stand them erect in little sets, making the familiar stooks.

Threshing. After a few days drying in the stook, if the weather is favourable, the grain is ready to be threshed. This grain, as has been stated, is not gathered into barns, as in Eastern Canada. Its very bulk makes the providing of such shelter impossible; time would not permit of such methods; and the general weather conditions do not demand it. The sheaves may be gathered and built into little groups of stacks. This is largely done in the areas of the smaller grain fields, because threshing machinery is not so generously supplied there, but the practice of stacking is not widespread.

The more common method is to thresh direct from the stook. The threshers gather the sheaves on wagons and drive them to the machine, which is conveniently placed in the field. Other teams drive the threshed grain directly from the machine

to the nearest elevator; or it may be stored in granaries in the fields or at the farmstead. As soon as the land within easy reach is stripped, the threshing outfit moves on, leaving behind it a huge pile of straw which its blower has heaped up. Even after twilight the roar of the machine and the shouts of the threshers may be heard, for every moment is precious at threshing time.

Changing Methods. Gradually, changes are occurring in the methods of the Manitoba farmer. More and more the fields are being fenced in, better buildings erected, roads graded, telephone lines strung, smaller gasoline outfits are replacing the huge straw-burning steam threshing engine, and there is an introduction of more and more mixed farming. Many of the farmers to-day own their own threshing machines, and of late years a few have begun to operate the combined harvester and thresher. A somewhat wider introduction, however, has been made of the swather and thresher. The swather cuts the crop and leaves it in swaths or ribbons, unbound. After a few days of drying it is picked off the ground and threshed by an engine drawn thresher.

Wheat. Wheat still occupies the largest acreage of any cereal crop in Manitoba, being followed by barley and oats. Only the spring-sown varieties of wheat are sown. No record has been, or very well could be, kept of the largest yields of Manitoba crops, but yields of forty and forty-five bushels of



Cutting Grain on a Manitoba Farm

Manitoba: Some Phases of Agricultural Growth

WHEAT

	BUSHEL
1885	7,429,000
1890	14,866,000
1895	31,775,000
1900	13,025,000
1905	55,761,000
1910	39,916,000
1915	26,663,000
1920	37,542,000
1925	39,453,000
1930	45,278,000

OATS

	BUSHEL
1885	6,364,000
1890	9,513,000
1895	22,556,000
1900	27,797,000
1905	45,484,000
1910	42,648,000
1915	101,078,000
1920	57,657,000
1925	71,770,000
1930	50,562,000

BARLEY

	BUSHEL
1885	1,113,000
1890	2,069,000
1895	5,645,000
1900	2,939,000
1905	14,064,000
1910	12,960,000
1915	35,423,000
1920	17,520,000
1925	52,156,000
1930	49,970,000

CREAMERY BUTTER

IMPORTS EXPORTS
CARLOADS

1912	55
1913	35
1914	20
1915	50
1916	68
1917	96
1918	175
1919	153
1920	134
1925	316
1930	273

wheat to the acre, on the field basis, have been known in many districts. At the Brandon Experimental Farm, in 1922, wheat-yields ran up to 58½ bushels per acre. The greatest quantity harvested in Manitoba in any one year was the crop of 1915 which totalled nearly ninety-seven million bushels and averaged 26.4 bushels to the acre. Prior to about 1924 almost the entire wheat crop of Manitoba consisted of the hard red spring wheat class of the Marquis variety, but during the late "twenties" macaroni (or durum) wheats were largely sown in the more southern areas of Manitoba. This change was largely due to the greater rust resistance of durum wheat. To find the means to reduce the losses from grain rusts, the Dominion Government has established the Rust Research Laboratory on the grounds of the Manitoba Agricultural College. The ten-year wheat average for the province (1920-1929) was just below 16 bushels to the acre, with an average acreage of 2,637,000 acres.

Oats. Oats give a greater yield in bulk per acre than wheat, and about 86 per cent of all the Manitoba farmers grow oats, whereas only 73 per cent of them grow wheat. Especially in the higher altitudes, where the soil is moist and the temperatures relatively cool, oats both grow and mature to better advantage than does wheat and the straw makes valuable fodder. Manitoba oats have a high feeding value because of their exceedingly light hull and plumpness of kernel.

Barley. Manitoba is the leading barley-growing province in Canada. During the years 1924-1929, inclusive, Manitoba produced between 43 and 44 per cent of Canadian barley. The ten-year average in yield has been 24.67 bushels per acre. In some districts farmers have specialized upon producing superior barley for the seed trade. Part of the crop is used by the malt-~~ing~~ trade; a portion is exported; but a very large proportion is fed on the farms where it is grown. Manitoba barley is very light hulled, weighs heavy, and analyses show it to contain food values that can hardly be equalled anywhere else.

Flax. With a ten-year average yield of over one and one-third million bushels of flaxseed, Manitoba occupies second place to Saskatchewan in Canadian flax production. The crop is grown primarily for seed rather than for fibre. The best flax district is in the Red River Valley, upon land which is relatively firm and a large proportion of Manitoba's flax is

grown there. The acreage varies very greatly according to the prevailing price of flax seed and the lateness or earliness of seeding. The ten-year average is 9.88 bushels per acre. A start has been made in the establishment of industries utilizing flax straw.

Rye. Both fall and spring varieties of rye are grown, but fall rye is decidedly the more popular. Fall rye enjoys an advantage in that it gives variety to the season of sowing and reaping, and because it adapts itself to tillage methods that help to kill weeds. The average yield per acre for ten years is just below 16 bushels.

Grades of Grain. Winnipeg is the central market and clearing house for much the largest proportion of the grain grown in Western Canada, and here the successive years' yields are graded by government experts and marketed on the basis of such examinations. The wheat grade par excellence is known as No. 1 Manitoba Hard, but in actual merchandising it is not usually considered practicable to keep separate the carloads of this grade, and so the standard commercial grade is No. 1 Northern, which is one of the best, if not the very best, commercial milling wheats in the world. Other lower grades are fixed according to the qualities of the wheat offered or the condition in which it has matured and been gathered. Oats, barley and other grains are graded in like manner.

Results of Expansive Grain Growing. Growing grain so largely for export on such a generous scale brings an avalanche of grain upon the railways in the fall threshing season. "Mixed" farmers feed varying proportions of their crops, in some cases the entire production. The average Manitoba grain-grower, however, if close enough to market to do so, hauls some grain to the railway direct from the threshing machine; and he usually delivers a considerable quantity before the snow falls. Hence to take care of these great crops an extensive elevator and shipping system has grown up.

Improved Varieties. No account of grain-growing in Manitoba would be complete without reference to the fascinating story of the introduction of new and improved varieties of cereals and the enhanced success of the industry resulting therefrom. From time to time new seeds have been imported or propagated, which, by virtue of special qualities possessed,

have proved more suitable to prevailing conditions, thus resulting in widening the area of production and giving more abundant yields and improved quality. The original varieties of wheat grown in Manitoba early gave way to the famous Red Fife, which for many years was king of all spring wheats. It derives its name from the colour of its ripe kernel, which is quite reddish, and the name of an Ontario farmer, Donald Fife, who introduced it from Europe about the year 1841. It reached the Middle States about 1860 and Manitoba about 1870. Red Fife was eventually entirely superseded by Marquis, which is of the same general type but ten days earlier.

Story of Marquis Wheat. The story of the wonderful Marquis spring wheat is of paramount interest, especially to Canadians. Bred on the Central Experimental Farm at Ottawa and introduced by Dr. Charles E. Saunders, then Dominion Cerealist, it spread with astonishing rapidity over Western America and has attained the highest rank among spring wheats. Commencing with a single plant which yielded a few grains to be planted in a tiny plot at the Experimental Farm, Ottawa, in the spring of 1904, Marquis produced a crop that year weighing less than a pound. The estimated value of this wheat produced in 1918 was \$600,000,000.

Marquis possesses several qualities that make it especially attractive to the western grain-grower. It ripens early, thus reducing the risks from frost and rust and extending the belt in which wheat may be successfully grown. It is resistant to shelling and stands up well under storms. At the same time, it is an exceptionally heavy yielder and its milling qualities are unsurpassed. The gain to farmers in particular, and the world in general, that has resulted from the introduction of this variety can be estimated in millions of dollars.

Many other varieties of wheat of special qualities have been introduced, including Reward which won the World's Championship in 1930 for a Peace River farmer and which promises to prove a keen rival to Marquis. Barley, oats and other cereals have been similarly experimented with and improved. The introduction of improved strains of cereals having qualities especially adapted to prevailing conditions in Manitoba has been a most important factor in the development and success of grain-growing.

STOCK-RAISING.

With the establishment of ampler markets and a better knowledge of the opportunities for the successful prosecution of stock-raising in Manitoba, farmers are steadily turning their attention to this phase of agriculture. The general tendency towards mixed farming has a two-fold objective. It creates a greater stability in the operation and revenue of the farm, distributing the risks and ventures as well as the labour more evenly throughout the year and giving a greater latitude in marketing. It also guarantees the upkeep and improvement of the condition of the farm, preventing the impoverishment of the soil, controlling the weed evil and utilizing hilly, stony or other areas not suitable for grain-growing.



Boys and Girls Calf Club's Exhibit, Souris

Chief among the advantageous conditions in Manitoba may be mentioned cheap land; plentiful and cheap food because of the heavy yield on cheap land, plentiful native pasturage and wild hays of high food values, abundance of good pure water, a fully organized market, plenty of railways and excellent shipping facilities and a remarkable freedom from animal diseases.

Cattle. Cattle are more numerous in Manitoba than any other class of farm stock. Most of the cattle may be classified

as "beef grades," a large proportion being of Shorthorn strain. All the leading breeds, however, are represented. In the newer districts the pasturage is mostly native vegetation, but in the older settled areas cultivated grasses and sweet clover are largely used. The cattle population of Manitoba approximates 700,000 head. Contrary to general belief, the climate of Manitoba does not prohibit a great deal of outdoor life by cattle during the winter months. Breeding cows and calves require more shelter than other classes of cattle. The average farmer turns his cattle out for a part of the day all winter long, and the extent to which this is done varies with the farmer and the class of cattle. Sometimes horses and cattle are wintered out of doors entirely. These find protection from the winds about straw stacks, in ravines, and in groves of trees. The dryness of the air and the exceptional amount of sunshine are very favourable. The cattle do not get wet with melting snow, as in the Corn Belt to the south, and consequently tolerate with possibly less harm the colder, but drier, temperature. Nature also provides a thicker coat of hair.

Wintering Outdoors. Live stock wintered out, however, require adequate feeding as, on account of the snowfall, only in exceptional cases can forage be found. On farms where grain has been threshed cattle will feed at the straw piles, and, if given a little grain in addition and provided with plenty of water, will come through in good condition. At the Government Experimental Farm at Brandon, tests in fattening well grown steers for the market have been made over a period of several years. The cattle used in these feeding experiments—good beef-grade steers rising three years old—have been kept continuously outdoors during the winter of the experiment, running over a southern slope in a clearing made in a thick bluff, and being given an ever-ready supply of water. Careful record was kept of each lot and the results are conclusive that fattening steers in this way can be profitably carried on.

The practices of different farmers vary a great deal in the matter of letting cattle run out of doors. As a rule, young cattle range from the middle of April to the middle of November without extra feeding, a period of seven months—but good farmers feed at least their breeding cows at either ends of this period. In connection with the keeping of live stock, two

very important facts are worthy of consideration: first, that the land itself can be procured now at exceptionally low prices, and, second, that fodder of every variety can be grown in great abundance.

Manitoba beef cattle have on various occasions maintained their right to rank with the best. The success with which they can be raised, the undisputed quality of the finished product, and the profits that reward enterprising stockmen specializing in this branch of agriculture have assured the future of the beef industry of Manitoba.

A tuberculosis-free area comprising about 3,000 square miles has been established, and in this area the cattle are all by test shown to be free from this disease.

Wild Grasses. There are scores of varieties of native grasses in Manitoba, these varying in distribution mostly in conformity with the type of soil and the drainage of the land. Most of the farm animals of Manitoba still graze very largely upon the native grasses, though, in the older settled parts, domesticated forage crops are coming yearly into greater use. A large part of the Manitoba hay cut—probably over three-fourths of it—is still taken from the natural unsown meadows. Roughly, this native hay may be divided into two classes, “upland hay” and “slough grass hay.” Among the upland grasses, there are several that make a very excellent quality of hay, sometimes almost as good as the best timothy. “Slough grass” hay is cut from areas that are flooded for portions of the year and that, consequently, produce ranker, coarser grasses, usually in profuse bulk per acre.

In addition to the grasses proper, there are several other native forage plants such as wild peas and vetches; and these add variety and value to the grazing.

Cultivated Grasses and Clovers. Several cultivated grasses and clovers are successful in Manitoba. The Manitoba Agricultural College has classified the province into agricultural zones, mainly on the basis of types of soil and altitudes, and gives advice in regard to the kinds of plants adapted to each zone. The leading cultivated grasses recommended are: Timothy, Awnless Brome, Western Rye, Meadow Fescue and Blue Grass.

The best leguminous forage crop for most parts of Manitoba is alfalfa, which can be successfully raised over most of the province, and which will produce two cuttings of hay in a season. Sweet clover, a much coarser and more rapid growing legume, has, however, increased much more rapidly in acreage during recent years, its spread really being phenomenal. Sweet clover is used for pasturage, for hay and for ploughing under as fertilizer, and for weed killing purposes. Red clover grows very luxuriantly in the east side of Manitoba. Alfalfa experiments at Brandon have shown over five tons to the acre, and farmers from all over the province testify to the success they have had with it.

Annual Forage Crops. The abnormally fast growth in Manitoba makes it easy to raise summer forage, either for pasture or for hay. Late sown oats or mixed oats and peas are the most commonly grown and the most easily handled, and winter rye is grown to some extent for early spring feed. For summer catch crops, the millets thrive wonderfully and yield heavy crops.

Silage Crops. For the silo, which is used by many of the most progressive Manitoba live stock raisers and dairymen, corn grows well, particularly in the south and in the lower altitudes. Although the seasons are not as long as in the Central States, the growth is fast and many Manitoba farmers are proving that corn can be successfully raised. It has also been demonstrated that sunflowers, stupendous crops of which can be grown without difficulty, make ensilage of satisfactory food values. Sunflowers are relatively frost resistant, and can be grown in any agricultural area of Manitoba. Corn ensilage is the more valuable, pound for pound, but sunflowers, which contain more waste, make up in weight what they lack in nutrients. Occasionally other green crops—green barley or oats, sunset clover, alfalfa or even a crop mixed with weeds—is ensiled and yields good food values.

Some of the silos used are of the above ground type, mostly made of staves; other silos are of the pit class, being simply long cellar-like excavations made by the use of the scraper. Most of the pit silos have been made since 1920.

The large crops of oats and barley that can be grown on Manitoba land form one of the great natural advantages of the province for the raising of beef cattle and fed stock of every

kind, as well as for dairying. A mixture of oats, barley and alfalfa makes an ideal feed.

Horses. The success of horse-raising in Manitoba is also an assured fact, and the industry is on a sound and progressive footing. The Provincial Government has enacted very advanced legislation in regard to the breeding of horses. A direct check is placed at the outset on the raising of inferior and scrub progeny; and so the general standard of the horses of Manitoba is a high one. One effect of this has been a growing export trade of horses from Manitoba, especially to the eastern provinces.

Extensive importations of the best breeding stock available have been made from Europe and the United States, and Manitoba now possesses some very fine pure-bred horses.

Both soil and climate are admirably suited for horse raising. The abundance of pasture and feed of every description suitable for horse feed which can be grown in Manitoba brings the cost of production down to a lower level than in older settled countries. While the winters are somewhat severe, the atmosphere being dry and the cold not so keenly felt as in more humid areas, there are thousands of horses wintered annually out of doors, and these come through in surprisingly good condition.

Manitoba horses are very free from diseases of all kinds.

The present general trend of Manitoba farming is toward a more intensified and diversified system, and this calls for crop rotation, smaller fields, and the need for fencing. This condition will make horse-power still more popular than at present.

The horse population of Manitoba approximates 370,000. Clydesdales and Percherons are the breeds most generally used.

Swine. Swine-raising is on a firm commercial basis in Manitoba. The chief factors favourable to this industry are the cheapness with which feed can be raised, the ideal summers for pig-raising, relative freedom from pig diseases, the natural adaptability both of feeds and climate to the raising of the "bacon" type of hog, and a well organized market that maintains a generally satisfactory price level.

The most generally used breed is the Yorkshire. Berkshires, Tamworths, Poland Chinas and Duroc Jerseys are raised to some extent. The prevailing class of pigs is of the "bacon" type, which provides the kind of meat called for by the British.

market. As at all other large Canadian packing centres, the pigs are graded by Dominion Government graders upon reaching the Winnipeg market.

Manitoba farmers who have been successful in hog-raising favour some grazing during the summer. The advantage of this is that it considerably reduces the cost of the finished pork. The pastures most generally used are alfalfa, rape, and spring-sown grains. Fall rye makes an excellent pasture for the early spring.

The principal grain feed given to pigs is barley, which has been used with great satisfaction from the standpoint of gains made, quality of pork produced and cheapness of cost. Wheat screenings have also proved to be good swine feed and are commonly used for this purpose.

Shelter for pigs is cheaply provided. Where the breeding is confined to one spring-born litter per year, and where these are marketed at from six to eight months old, practically no winter shelter is required except for the brood sow. For wintering brood sows, shelters made almost entirely of straw are used with excellent satisfaction. Quite often a rough pole structure



Pigs Wintering Out in Manitoba

is used to support a pile of straw which is thrown over and around this support. An opening is maintained, through which the pigs are able to enter the open space beneath the poles; then from there they burrow outward into the straw.

For the man who goes in for mixed farming in Manitoba, and more and more Manitoba farmers are doing this every year, a reasonable number of hogs, without doubt, are among the best money-makers.

Sheep. Up to the present the sheep population of Manitoba is very small in relation to the opportunities that the industry offers. Winnipeg is a good market at all times for both sheep and lambs; in fact in many years the farms of Manitoba do not supply as many sheep as are killed in the Winnipeg abbatoirs. The average prices per 100 pounds for good lambs at Winnipeg the year round have been as follows:—1929, \$10.90; 1928, \$11.81; 1927, \$11.08; 1926, \$10.85. There were two main reasons why Manitoba farmers did not take to sheep-raising in the early farming history of the province. One was that the unexampled success with grain crops kept most of them to that one line. The other was that in the earlier days of the country coyotes were plentiful and did much damage. To-day the danger from coyotes is much less, and many farmers are realizing that there is profit in wool and mutton, and also that sheep are exceptionally good weed killers.

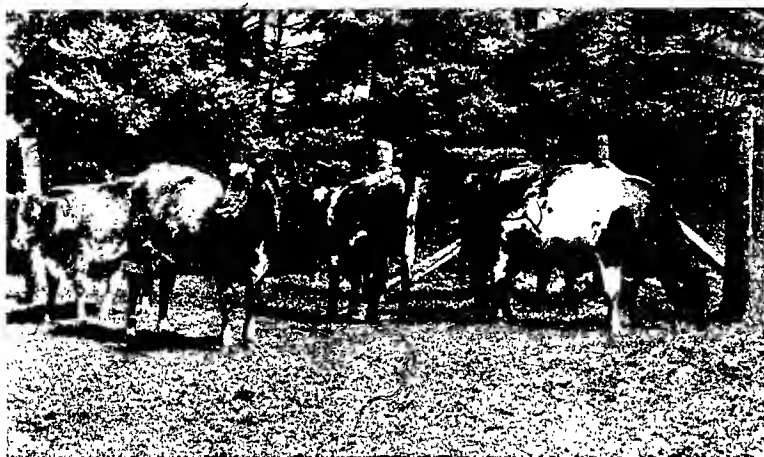
In many parts of the province there is still an abundance of natural forage. Then, too, there is always a large supply of screenings available at low cost. Screenings are largely used by those farmers who buy a carload of thin sheep from the range lands further west and feed them on their own farms to await a better market.

The Manitoba climate suits sheep well. Though the winters are cold, only shed protection is required, as sheep do not thrive in a warm building. Protection from wind is the great requirement.

The wool market is well organized, and wool sales considerably augment the sheepman's revenue.

In the mid-lake territory of Manitoba the Dominion Live Stock Branch has organized public auction sales of grade lambs, and these have been quite a success.

Stockyards. The St. P. stock marketing centre for Western Canada is some two miles distant from Winnipeg to the live stock industry of the Canadian yards at Chicago bear to the Western States. From this point of view these yards are exceptionally favourable. They were constructed by the railway companies and are used by both the Canadian National and the Canadian Pacific. They provide an absolutely free and open market where the farmer has every opportunity to market his live stock under the most favourable conditions. The yards are so located as to be within a very short distance of the Winnipeg terminals of the railways, thus minimizing all chances of delay in live stock reaching the



Young Cattle in Manitoba

market. They were first opened for business in 1913. In constructing them the railway companies had their engineers visit the large live stock markets in the United States and features were introduced in the construction which made these yards the most modern and sanitary on the continent. They now cover about 60 acres, and have a capacity which will take care of about 10,000 head of cattle, 10,000 hogs and 4,000 sheep at one time. They are the largest in Canada and represent an investment of about a million dollars.

Winnipeg is therefore the live stock market for Western Canada cattle. Prices are ruled to a certain extent by the

eastern and southern markets. A shipper always has the option of selling at Winnipeg or shipping through to St. Paul, Chicago, Toronto or Montreal. The Winnipeg market, however, is usually high enough to get the majority of the cattle.

The Dominion and the Manitoba Governments have co-operated with all interests in facilitating the production and handling of live stock; and with the low-priced farm lands available, the institution of excellent financial arrangements by the Provincial Government in arranging for assistance to clubs and individuals wishing to improve their stock by using pure-bred sires; and the favourable marketing conditions at the stockyards, the province of Manitoba offers unexcelled opportunities for success in live stock raising.

DAIRYING

During the past fifteen years the dairy industry has become firmly established as a permanent exporting branch of agriculture in Manitoba. From the time of early settlement some butter was made; but the "dairy butter" trade never provided a uniform and exportable surplus. Until 1915 Manitoba was importing creamery butter for the best consuming trade. In that year, however, she exported fifty carloads, valued at \$324,800. This achievement may be accepted as marking the turning point in the industry and the beginning of an active era of development along permanent lines.

The Dairy Act. In order that the industry might have its foundations laid on a wise and permanent basis, the Provincial Government in 1915 introduced the Dairy Act, which aims to assist and encourage the producer as well as to protect the consumer. Part I of the Act deals with the incorporation of creameries and cheese factories, requiring government approval of the sites and plans and prescribing certain regulations for the transaction of business. Part II deals with sanitation and operation. It stipulates that every creamery or cheese factory must be licensed, provides for their inspection and empowers officials to close any factory found operating under unsatisfactory conditions. The Act also provides for the grading and branding of all dairy products by government inspection.

The Dairy Branch. Still further to insure the success of dairying and to keep pace with its rapid growth, the Provincial

Government in 1917 established the Dairy Branch of its Department of Agriculture for the specific purpose of assisting the industry and guiding its rapid growth along permanent and stable lines. The work of this Branch consists of: (a) Administration of the Dairy Act. (b) Assisting in organizing and establishing new creameries and cheese factories. (c) Inspection of creameries and cheese factories by qualified instructors and inspectors, and assisting and advising cheese and butter-makers regarding the most up-to-date methods of manufacture. (d) The licensing of cheese and butter-makers and operators of the Babcock test. (e) Assisting in arranging provincial and inter-provincial competitions among the manufacturers of dairy products, for the purpose of standardization. (f) Developing the dairy industry by the holding of meetings, as well as by issuing bulletins, reports and other educational literature. (g) Supervision of cream grading. (h) Research in dairying.



Threshing Scene in Manitoba

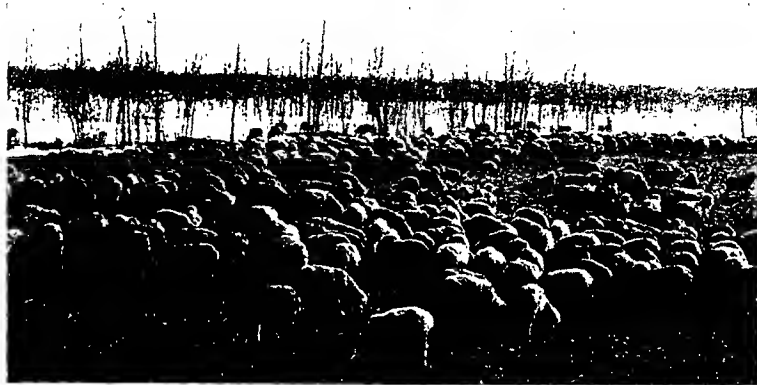
Cream Grading. There is no way of making good butter from bad cream. Quality of cream, therefore, was accepted as the foundation upon which to build a successful export trade in creamery butter, and so on May 1, 1923, a regulation came into effect under which all cream used at any Manitoba creamery is graded by government appointed officers. The farmer is paid according to grade. This has resulted in the delivery to the

creameries of a very large proportion from which a very high class of butter is produced.

Butter Grading. Butter grading is controlled by the Provincial Government, but later was taken over by the Dominion Department of Agriculture as part of its duties. For several years all creamery butter made in the province has been graded. Through this system it has been possible to standardize creamery butter and to place on the market uniform grades, which are so essential in building up and meeting the requirements of the trade both at home and abroad. Manitoba creamery butter is recognized now as the equal of any creamery butter produced on the continent, and has commanded top prices wherever offered.

Prizes Won. For several years Manitoba has taken the premier position as an exhibitor of creamery butter at the leading exhibitions of Canada. Besides winning championships and grand championships Manitoba butter has won the following percentages of all first prizes offered at the leading Canadian exhibitions where shown: 1929, 55.9 per cent; 1928, 54.9 per cent; 1927, 49.7 per cent; 1926, 40.9 per cent; 1925, 44.2 per cent; 1924, 51.2 per cent.

Generally Favourable Conditions. In general terms, the same factors which favour the raising of live stock apply with equal force to the dairy industry. Abundance of feed, both in summer pasturage and for winter use, favourable



Sheep Being Fattened in Manitoba

pure water, freedom from diseases, adequate shipping facilities and encouraging attitude of Government and a spirit of co-operation among all concerned are making dairying in Manitoba advance rapidly.

Markets. The Dairy Branch in 1929 reported that 7,000 Manitoba farmers were then engaged in dairying to some extent. From 900 to 1,000 shipped milk to Winnipeg. About 1,500 shipped sweet cream to the city for domestic use and the other 24,500 marketed the surplus product in the shape of cream for butter-making to one of the 58 creameries in Manitoba. The supplying of milk and cream for Winnipeg and other local cities and towns is in itself a considerable item while the consumption within the province of butter and cheese accounts for a large share of the dairy output. Outside markets have been extended to both eastern and western Canadian cities.

POULTRY KEEPING

For several years the poultry industry has shown steady and satisfactory growth in Manitoba, though there is still plenty of room for development. In the ten years between 1920 and 1930 the growth in numbers of hens and chickens was 63 per cent; turkeys trebled in number; geese increased over 75 per cent; and ducks increased about 15 per cent. The estimated numbers of poultry in 1930 were:—hens and chickens, 5,035,000; turkeys, 435,000; geese, 114,000; ducks, 75,000.

The industry forms an attractive side line to the Manitoba farm. Grains of all sorts are produced in profusion; so also is all manner of green feed. Grasshoppers and other insects augment the ration, especially with turkeys. Winnipeg and the other cities and towns furnish a good market close at home for eggs and dressed poultry, while a considerable amount of exporting is done.

The average number of hens and chickens per Manitoba farm is 97; turkeys, 9.7; geese, 2.2; ducks, 1.5.

Pure-bred poultry is widely distributed, so that there is no difficulty in procuring first-class breeding stock of all the best breeds of poultry.

During recent years the co-operative marketing of dressed poultry and eggs has developed largely.

Strict grading of eggs and dressed poultry is improving the quality of products and increasing the demand.

Incubators are largely used for hatching both in towns and on the farm, and the commercial hatcheries have become an important factor in providing day old chicks.

Poultry Extension Work. Both the Dominion and the Provincial Governments are giving the industry considerable attention and assistance. The Manitoba Department of Agriculture, through its Extension Service, gives those interested the benefit of the service of a specialist in poultry-raising. Practical lectures are given through agricultural societies and other organizations on breeding, feeding, housing, sanitation, marketing and associated subjects. Special attention is given to demonstration flocks and boys' and girls' poultry clubs, and an inspection service is offered to turkey breeders.

In 1919 the Poultry Breeders' Act was passed. It incorporated the Manitoba Poultry Breeders' Association, and provided for the forming of local organizations and their affiliation with the association. With unlimited space, an agreeable and healthy climate, food supplies in plenty and a ready and steady market for eggs and poultry, the industry has a most encouraging outlook.

BEEKEEPING

During the past ten years Manitoba has experienced a very large development in beekeeping. The Canadian West had previously always been a liberal buyer of honey. The proportion of Manitoba gathered honey has been very rapidly on the increase; and now although Manitoba still imports part of the honey it uses, it also does some exporting.

Three factors have operated to bring about this increased interest in beekeeping. First, there has been a growing appreciation of the honey-making potentialities of the native flora of the prairie. Second, there has been an almost phenomenal increase in sweet clover acreage. Third, the Department of Agriculture, through the office of the Provincial Apiarist, has encouraged beekeeping in many areas where previously it had never been tried.

The number of beekeepers in Manitoba, as at 1930, is estimated at 2,800. The number of colonies of bees is a little below 50,000, and the quantity of honey produced in recent years averages somewhere about six to ten million pounds. Decidedly the best honey producing plant is sweet clover, this giving a long season and generous nectar flow and being less affected by dry weather than most honey producing plants. The average yield of honey per colony is about 140 or 150 pounds.

The principal way of wintering bees in Manitoba is in cellars or basements. They are placed in winter quarters after they have had their last fly for the year, which is usually about the last week in November. They are taken out again when the willows bloom in the spring. Cellars fashioned after the manner of root cellars have also been quite widely utilized with success as winter repositories for bees. Winter losses among bees are very little, if any, heavier in Manitoba than the average.

During recent years, however, many of the beekeepers have been large buyers each spring of "package bees" from the southern United States. By purchasing newly hatched bees by the pound, weak colonies are strengthened or new colonies are started. The honey gathering ability of the swarms has been speedily augmented by this practice.

Manitoba honey has a flavour and body that cannot be surpassed. The principal honey and pollen plants are clovers, golden-rods, asters, dandelions, willows, wild fruit bloom, thistles, mustards, snowberry, basswood, fireweed, raspberry and pollen-producing trees such as oaks and poplars. There need therefore be no apprehension concerning lack of suitable nectar.

The question of diseases presents less of a problem in Manitoba than in a great many other places. There are many locations where the beekeeper is entirely secluded from all other apiaries. Then, too, the Provincial Apiarist is constantly inspecting apiaries for diseases, and effecting eradication under the powers granted in the "Foul Brood Among Bees Act."

FRUIT GROWING

The fruit-growing possibilities of Manitoba are annually becoming better understood. The early years of settlement

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But fruit growing was never an entire failure. A number of kinds of strawberries, raspberries, currants and gooseberries were relatively successful. Hardy crab apples in many cases withstood the winters and bore fruit. Even a few apple trees of the very hardiest sorts, brought from Ontario nurseries,



Strawberry Plot at Manitoba Agricultural College

-bearing proportions. The European types of
ied somewhat, but were a general failure.
e were a few people who were not easily discouraged.
encouragement in the fact that so many kinds of
of them of very fair quality, were growing wild.
n trees bore very heavy loads of fruit. Choke cherries
n" cherries were heavily laden. In places there were
cherries bearing fruit of good size. Saskatoon berries
very profuse, and of excellent flavour. The wild straw-
ries, wild raspberries and wild red and black currants were
generally distributed, and of excellent quality. In places there
were wild blueberries of such excellent quality that they at once
sprang into commercial importance. In the woods there were
grape vines with trunks two inches in diameter, and bearing
wild fruit.

Success in Apple Growing. It was found, even in the
early days of the farms, that the wild Siberian crab was entirely
hardy all over Manitoba. This fruit was then hybridized with
standard apples, and the hybrids were sorted out on the basis
of quality, size and hardiness. Further crosses were made
between these hybrids and other standard apples, and so the
size and quality of the fruit were improved. This line of en-
deavour has produced several varieties of apples of satisfactory
type hardy enough to ripen fruit on the prairies. Particular
attention to this matter has been given at the Morden Experi-
mental Station, where horticulture in general and fruit growing
in particular, is made a specialty.

Then there were individual growers who carried on trials.
Mr. A. P. Stevenson, of Morden, Manitoba, experimented with
so many varieties of apples that he eventually proved that
several kinds of Russian origin were hardy enough to bear
crops year after year. Of these types there are now plantings
around Morden where many trees twenty or thirty years old
are bearing quite heavily and successfully. These apples are
equal in size to those grown elsewhere, and many sorts are of
satisfactory quality.

Plums and Small Fruits. Success in plum growing has
been more easy to achieve. Progress in the direction of com-
mercial plum growing has been steady. The fruit-breeding
stations of the Great Plains area of America have produced

numerous plums and plum-cherry hybrids entirely adapted to Manitoba. Some of these are comparable in quality, size, yield and flavour with the best commercial plums grown elsewhere and acreage orchards of plums are being set out.

Of small fruits, raspberries, strawberries and red currants are now being exploited to some extent as commercial crops, and any land-owner could easily grow all he wishes for his own use.

Manitoba has several good nurseries, and from these suitable material for planting is now procurable.

The Manitoba Horticultural Association, which has a large membership, periodically prepares a revised list of fruits suitable for Manitoba, and copies of this list may be procured at any time through the Extension Service, Manitoba Department of Agriculture, Winnipeg.



Apples Growing near Morden

VEGETABLE GROWING

There has never been any difficulty in growing a great variety of vegetables in Manitoba. Many of these reach perfection in quality and produce heavily. All of the following are successful: Asparagus, Beans, Beets, Cabbage, Carrots, Cauli-

flower, Citron, Celery, Corn, Cucumbers, Kohl Rabi, Lettuce, Onions, Parsley, Parsnips, Peas, Peppers, Potatoes, Pumpkins, Radishes, Rhubarb, Sage, Salsify, Spinach, Squash, Summer Savory, Swiss Chard, Thyme, Tomatoes, Turnips, Vegetable Marrow.

Not only is vegetable growing carried on for family use, but the Winnipeg district has a vegetable canning industry, pickle factories and a large wholesale and retail trade.

Many excellent horticultural exhibitions are held annually in Manitoba, and Manitoba vegetables have been successfully shown at the Royal Winter Fair and elsewhere. Quite noteworthy has been the winnings in the Cauliflower King Contest, an all-American competition, in which Winnipeg gardeners have repeatedly won first place.

ORNAMENTAL SHRUBS AND FLOWERS

Manitoba has some beautifully adorned grounds, both public and private. Among the most successful ornamental shrubs are the following: Lilacs, Honeysuckles, Caraganas, Ginnalian Maple, Flowering Currants, Red Willow, Sumac, Elders, Spireas, Cotoneasters, Japanese Barberry, Hydrangeas and Japanese Rose.

A very long list of flowers are grown to perfection. The displays of dahlias, gladioli, sweet peas, and many of the better annuals, made annually at the Provincial Horticultural Show are hard to equal anywhere.

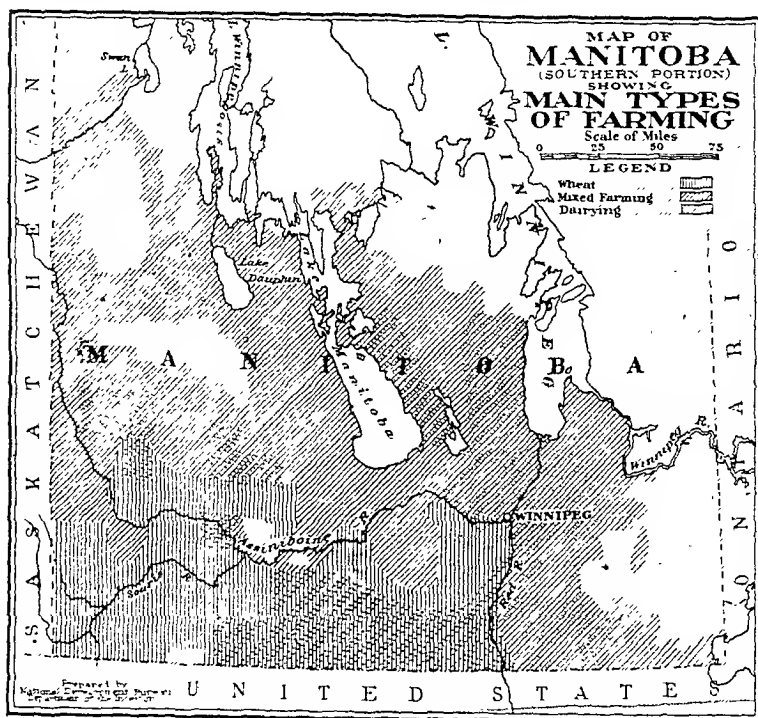
MANITOBA AGRICULTURAL COLLEGE

The first definite step towards higher agricultural education in Manitoba was taken in 1902 when the Provincial Legislature appointed a commission to inquire into the possibility of establishing an agricultural college. The report of the commission was favourable to such action, and in 1903 an Act was passed providing for the establishing of the college and outlining its method of government. In 1905 building operations began, and in November, 1906, the college was formally opened. In 1907 it was affiliated with the University of Manitoba so that the degree in agriculture might be conferred on students who had successfully completed the five-year course. In 1912 the

college was granted degree-conferring powers, but in 1916 an Act was passed providing for re-affiliation with the University of Manitoba.

The college is beautifully located on a bend of the Red river, immediately south of and adjacent to the city of Winnipeg. The buildings, equipment and general surroundings are most modern and scientific in construction and arrangement. Tuition and residence accommodation are provided for 500 students divided in the proportion of about three men to two ladies. The curriculum embraces, in addition to the usual agricultural course, a course in home economics, a wide and varied extension service and general agricultural investigation and research.

Research. In addition to teaching what is now known about the science and practice of agriculture to the students who attend the institution, and extending this information by close co-operation with the Extension Service of the Department of Agriculture to those of the rural population who are not in a



position to take one of the courses at the college, a third line of work, and the one that has probably the greatest bearing on the success of the agricultural industry of the province, is that of investigation and research. While much has been accomplished in recent years in the solution of many agricultural problems, there are constantly arising new problems and new phases of old problems that demand an early solution if large material losses are to be prevented. The farming problem relating to the production of crops and of live stock, the economic questions having to do with the business of farming, and the social problems relating to the home and rural life, are constantly receiving such attention as the members of the different departments can give after the other necessary services in connection with instruction are provided for.

The policy of the college with respect to investigational work is to diagnose as accurately as possible the various problems as they arise, and by the aid of science and practical experiment and such community organization as seems desirable, to attack them in the order of their importance, having in mind the greatest possible advantage to the State as a whole. The results of these investigations are, of course, passed on to the students through the regular teaching courses, and to the public through the various forms of extension work.

CHAPTER VI

CITIES AND OTHER MUNICIPALITIES

The municipalities of Manitoba, in 1930, consisted of 4 incorporated cities (Winnipeg, Brandon, St. Boniface and Portage la Prairie), 30 incorporated towns, 22 incorporated villages and 120 rural municipalities. With few exceptions the towns and villages are scattered throughout the great agricultural areas of the province. Their principal function is the transaction of business directly connected with the agricultural industry, on which they are dependent for their prosperity. A few have grown up as centres of fishing, mining, or forest industries, or in connection with the fur trade, transportation undertakings and hydro-electric developments, or as summer resorts.

WINNIPEG

Winnipeg is the capital of the province of Manitoba and the largest city in Western Canada. By virtue of its strategic location it is the gateway to the prairies and it exerts a dominating influence over their development. Situated in latitude 49° 54' North, longitude 97° 08' West, at the confluence of the Red and Assiniboine rivers, it is 40 miles south of lake Winnipeg, 60 miles north of the boundary line between Canada and the United States of America, and almost midway between the Atlantic and the Pacific oceans. Its altitude is 760 feet above sea-level.

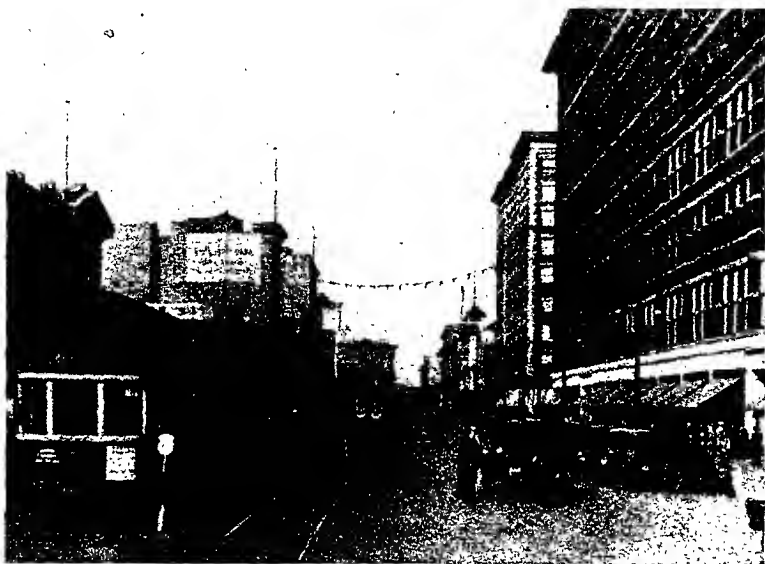
From a Hudson's Bay Company trading post (Fort Garry) in 1870, with a population of 215, Winnipeg has become a metropolis of about 210,000 people. When it was incorporated as a city in 1873, there were 1,869 inhabitants. In population it is exceeded now by only two other cities in Canada.

A Key City. Winnipeg is now the greatest grain centre on the American continent and the financial, commercial, wholesale and manufacturing centre of the middle West. Owing to its geographical position, and its very complete railway facilities, with branches reaching out in every direction, it affords great possibilities for trade in the province and in the Northwest and offers special advantages for the establishment of manufacturing and other industries. Through its municipal-

electric system, it supplies as cheap electric power as any city in North America. The new soft water supply is adequate for the needs of a city of one million inhabitants.

The city council is composed of a mayor and eighteen aldermen. The mayor is elected annually from a vote of the entire city. Three aldermen are elected annually from each of the three wards into which the city is divided, and they hold office for a term of two years. The proportional representation system of voting prevails, having been inaugurated in the civic elections of December 3, 1920.

Winnipeg has a land area of 14,865 acres to which might be added 422 acres covered by water and 674 acres of land out-



Portage Avenue, Winnipeg

side the city limits proper but practically constituting part of the city, thus giving a total area of 15,961 acres, or 24.9 square miles. The city has 500 miles of streets, 236 miles of lanes, 379 miles of boulevards, 316 miles of water mains and 94 miles of street railway within the city limits, or 121 miles in all, belonging to the Winnipeg Electric Railway Company. The rate of taxation in 1929 was 33 mills, and the total assessment was \$232,260,930. The gross debenture debt, including self-support-

ing and local improvement debts, was \$58,800,000. The death rate in 1929 was 8.8 per thousand population and the birth rate 22.

An Educational Centre. It is the educational centre of the province. School statistics show that in the year 1929 there were 69 buildings, valued at over \$10,000,000 (including furnishings), attended by 41,510 pupils under the instruction of 1,016 teachers and specialists. In addition 3,041 pupils and 123 teachers were enrolled in evening schools. Children's playgrounds are liberally supplied. A public library distributes books through a main library building, two branch libraries, eight branch stations, twenty-three school libraries and six other libraries in different institutions.

There are 36 public parks and squares at Winnipeg, with a total area of 960.2 acres. These, with the exception of Assiniboine, Kildonan, and St. Vital parks and two golf courses, are located within the city limits.

The city owns and operates its own hydro-electric power system, stone quarry, fire alarm system, police signal system, fire service, water works, asphalt plant and gravel pit. It enjoys the distinction of being the first city in America to acquire a municipal asphalt plant and is perfecting a central heating system.

The fire department consists of 305 officers and men operating on the two platoon system of 10 hours a day and 14 hours a night respectively, with one day of rest in seven. Twelve stations are maintained. The value of buildings, sites and apparatus was placed, in 1929, at \$897,714.

The police department operates three stations. The force consists of 264 officers and men. Streets patrolled total 24 miles. The headquarters station has recently completed the installation of a short-wave broadcasting service. A fleet of cars equipped with receiving sets will patrol the city at large and being in constant touch with headquarters will greatly add to the efficiency of the service. In this advance step Winnipeg is again pioneering the way in Canada.

Winnipeg is a city of beautiful and substantial homes. Residences, streets, parks, schools, churches and public buildings compare favourably with similar institutions in any city of corresponding size on the American continent. The new Mani-

toba Provincial buildings, many commercial and office buildings and the Canadian Pacific and Canadian Government railway terminals with their respective hotels, the Royal Alexandra and the Fort Garry, are worthy of special mention.

Water Supply. Winnipeg's new water supply system is one of the five greatest undertakings of their kind in the world. In 1913 a comprehensive scheme was promoted to supply the city and contiguous territory with an abundant supply of pure and soft water, and this resulted in the creation of the Greater Winnipeg Water District.

The area comprising this district includes all of the city of Winnipeg, part of the city of St. Boniface, parts of the towns of Transcona and Tuxedo, and parts of the municipalities of St. Vital, Fort Garry, St. James, West Kildonan and East Kildonan, having a total area of 52.44 square miles.

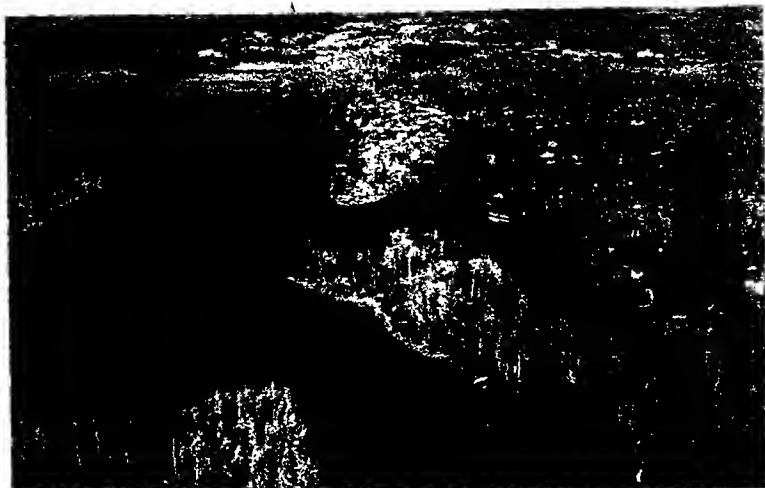
Shoal lake, from which the water is drawn, without drawing upon the main Lake of the Woods, can be depended upon to furnish all the water needed for Winnipeg until the population shall have reached about 850,000, and with the help of Lake of the Woods can furnish a practically inexhaustible supply. The water of Shoal lake is of excellent quality for domestic and manufacturing purposes. The total length of the aqueduct is 96.5 miles. The concrete portion of the aqueduct has a capacity of 100,000,000 imperial gallons per day, and the pipe line portion is capable of discharging 30,000,000 gallons per day into the reservoir. The water from Shoal lake was first distributed to the city on April 5, 1919.

BRANDON

Brandon, the second largest city in Manitoba, has a population of 17,500 according to its own figures. Situated on the bank of the Assiniboine river, 133 miles west of Winnipeg, it occupies an important position in the heart of the great wheat belt of southwestern Manitoba. Like many other western centres it had its origin as a trading post and was formerly reached from Fort Garry by canoe or by overland travel. Being located on the main line of the Canadian Pacific railway, its growth was rapid following the inauguration of service on this line in 1886. It is served now also by the Canadian National railway, the Great Northern railway and a number of branch

lines radiating into the rich surrounding territory. A number of all-weather highways also lead out in every direction to the great wheat fields surrounding it.

Compactly built, yet not crowded, the city presents a prosperous aspect. Its educational system includes several colleges, collegiate institutions and public schools. Municipal enterprises include a motor fire department, an electric street railway, and an electric light and power plant, a central heating plant, a gas and power plant, 28 miles of water mains, 23 miles of sewers and 31 miles of granolithic sidewalks. By a recent arrangement, the municipal power plants have been acquired by the Manitoba Government, which will eventually extend its hydro-electric system to the city.



Aerial View of Cold Lake

In the business section are found about 20 large wholesale houses, and a large range of retail houses of the first rank. Nearly all the important farm implement manufacturers of Canada and the United States have distributing houses at Brandon. Being the centre of a rich agricultural district, it has an extensive trade in agricultural products and farm commodities of all kinds.

Important industries include flour and oatmeal mills. There are also several manufacturing plants, brick works, creameries and other industries.

Brandon is the seat of Manitoba's provincial exhibition, held annually in the summer time, and of the Manitoba Winter Fair which has done much to encourage the production of beef cattle, sheep, swine, horses and poultry. It is one of the greatest live stock winter fairs in Canada and ranks with the great International of Chicago. A Dominion Experimental Farm adjoins the city.

ST. BONIFACE

The city of St. Boniface is located on the east side of Red river at the mouth of the Seine and directly opposite the mouth of Assiniboine river and the city of Winnipeg. It is one of the oldest settlements in Manitoba, dating from the time of Selkirk's Red River colony. At this point Roman Catholic missionaries established their headquarters over 100 years ago and the school founded by them in 1818 has developed into the present St. Boniface College.

St. Boniface is the seat of the Roman Catholic Archdiocese of St. Boniface. Its cathedral is the largest west of Toronto and one of the finest in Canada. The French-speaking population predominates and the city is the home of many institutions particularly associated with their religion and tongue. St. Boniface College, which now forms by affiliation part of the University of Manitoba, heads the educational institutions. In addition are found a normal school, three collegiates, a seminary, four public schools, a convent, a boys' academy, and an orphanage. There are also two hospitals, five churches and an Old Folks' home.

The city is well supplied with transportation facilities, being served by the Canadian Pacific, Canadian National and Great Northern railways. It also has electric railway connection with Winnipeg. These railways all have extensive yards in St. Boniface and its position as a transportation and shipping centre is important.

One of its most important industries is that associated with the union stockyards. The business connected with the marketing and shipping of live stock and the abattoirs and packing

plants that are growing up in the vicinity of the stockyards give to St. Boniface a position of primary importance in the meat business. The milling, storing, and shipping of grain is also reaching large proportions in this city. One of the largest flour mills in Canada is located in it.

The municipality of St. Boniface was incorporated in 1880. It was incorporated as a town in 1883 and as a city in 1908. Its area is 11,290 acres, and its population, according to a municipal enumeration made in 1927, was 15,500.

PORTAGE LA PRAIRIE

Portage la Prairie is one of the most pleasing of several small cities found on the great plains of Western Canada. It is beautifully situated in the heart of the far-famed Portage plain, one of the finest wheat-producing districts in the world. In every direction the rich fertile plains stretch away to an unbroken circle of horizon.

The city is located on the main lines of the two great Canadian transcontinental railways. It is 56 miles west of Winnipeg and about midway between Montreal and Vancouver. There are more than 40 miles of trackage within the municipal limits and, in addition to the main lines, a number of branch lines radiate in various directions.

Portage la Prairie has an unlimited supply of pure water, a modern water works plant owned by the city and a splendid sewerage system. Hydro-electric power is delivered from the city of Winnipeg over a steel tower transmission line. Low rates for domestic lighting and cooking are available and rates for power are very favourable. The population is about 6,450.

Important industries are two large flour mills, one oatmeal mill, a structural casing foundry, plants manufacturing gasoline engines and threshing machinery, steel bins and culverts, a hemp cordage factory, and three large brickyards. With cheap hydro-electric power, excellent sites and favourable labour conditions, Portage la Prairie offers unusual inducements to manufacturers.

Like Brandon, it is a city of homes. Its streets are well shaded, wide and clean. Boulevards, parks and drives with attractive rows or clusters of trees break the monotony of the prairie aspect. There is an exceptionally attractive and free tourist camp.

TOWNS AND VILLAGES

Of Manitoba's thirty towns, seven have populations in excess of 1,500 each. These are Dauphin, Minnedosa, Neepawa, Selkirk, Souris, The Pas and Transcona. Seven others have populations ranging from 1,000 to 1,500, and the remainder, according to the Municipal Commissioner's report of 1929, run from less than 1,000 to less than 400.

Dauphin. The town of Dauphin, with a population in 1929 of nearly 3,800, is the business centre of that beautiful and fertile tract of agricultural country lying between the Riding and the Duck mountains, and extending from lake Dauphin to the Saskatchewan boundary. It is headquarters also for considerable lumbering activities in the wooded slopes of these mountains, and for a winter fishing industry on lakes Winnipegosis and Dauphin.

Located on the Canadian National railway and on Provincial highway No. 5, its transportation facilities are of the best. Branch railroads and highways give good connection with the surrounding country. Except during the winter months a motor bus service is maintained with Brandon, Portage la Prairie and Winnipeg.

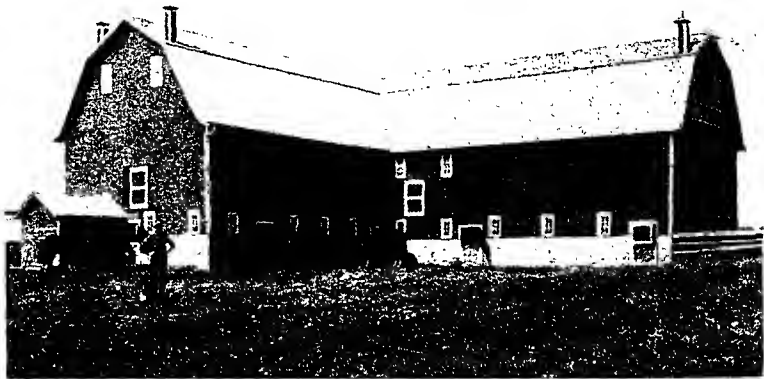
The town is exceptionally well represented in all lines of business and profession. It is beautifully located and substantially built. Its wide business streets, shaded residence avenues and permanent type of buildings give it an atmosphere of prosperity and stability. A very attractive natural park and tourist camp is of special interest to visitors.

Minnedosa. In the rolling but rich agricultural country south of the Riding mountains is found the prosperous town of Minnedosa. It is located on the Winnipeg-Yorkton branch of the Canadian Pacific railway, and on Provincial highways Nos. 4 and 26. Its population in 1929 was 1,665.

Minnedosa is one of the early centres of settlement in southwestern Manitoba. It enjoys all modern utilities and is attractively and substantially built. Its location, in the valley of Minnedosa river, is very picturesque. The surrounding country has many features of interest, including good duck-shooting and fishing. The town has good accommodation for visitors, including an attractive tourist camp. The city of Brandon lies about 25 miles south and a few miles west.

Neepawa. The town of Neepawa is located in the heart of one of the oldest and most prosperous agricultural regions of Manitoba. To the northwest are the Riding mountains, while south and east the fertile fields stretch away to the Assiniboine valley and the famous Portage plains. Attractively and substantially built, the town is up-to-date in every respect and has a population of about 2,000.

It is located on the Canadian Pacific and the Canadian National railways, and on Provincial highway No. 4, and is also the starting point of highway No. 5. These all-weather highways afford excellent motoring by direct routes to Brandon, Portage la Prairie, Winnipeg and other points.



Barn on Farm near Neepawa

The town, besides being the business centre of an intensive farming area, is well equipped from a recreational standpoint. It has a good golf course, a municipal tennis court, an attractive free tourist camp and good hotels, garages and service stations. There is good hunting and fishing nearby. Of greater interest, it is the most convenient point of entry to the new Riding Mountain National Park, and the official headquarters of the Park Superintendent.

Selkirk. Located on the west bank of the Red river about 24 miles below Winnipeg and a few miles from lake Winnipeg,

the town of Selkirk is headquarters for shipping on the great interior lakes of the province. It is also the centre of a considerable agricultural area, headquarters for extensive winter and summer fishing industries on lake Winnipeg and the scene of various other industries.

It is one of the oldest communities in Manitoba for in its vicinity were located the original Selkirk settlers. Nearby is the historic stone stronghold, Lower Fort Garry, erected by them in 1832. Old churches and other historic landmarks add to the interest of the region. Tourists and other visitors find the Selkirk district most enticing in both its past and present attractions.

Selkirk is connected with Winnipeg by steam and electric railroads, by Provincial highway No. 9 and by river transportation during the season of navigation. Intervening rapids in the river at Lockport have been overcome by the construction of the St. Andrew's locks. The town has hydro-electric power, modern utilities, substantial buildings and an attractive tourist camp. Its population in 1929 was 3,800.

Souris. The town of Souris, with a population slightly exceeding 1,700, is one of the old centres of settlement on the plains of southwestern Manitoba. It is very prettily located on the banks of the Souris river about 25 miles southwest of Brandon. Two branches of the Canadian Pacific railway and Provincial highway No. 2 pass through it.

Souris is in the heart of a wheat-growing and mixed farming country and some very progressive farms are to be seen in its vicinity. The town itself is well built and has a beautiful natural park in the valley of the river. It is a favourite point of call for motorists and other travellers.

The Pas. Long known as the Gateway to Northern Manitoba, The Pas occupies a strategic location on the south bank of the Saskatchewan river at the mouth of the Opasquia. It was founded in early days as a fur trading post and later came into prominence as the starting point of The Hudson Bay railway and the outfitting point for mining and prospecting in the mineral belt lying north of the Saskatchewan river.

It is reached by a branch of the Canadian National railway which leaves the Winnipeg-Prince Albert line at Hudson Bay Junction. The building of a highway to connect it with the

highways of southern Manitoba has been commenced. There is a limited amount of traffic on the Saskatchewan river during the season of navigation by steamboats and motor boats operating from The Pas and some traffic by dog teams during the winter. The town is railway headquarters for the operation of the Hudson Bay main line and branches to Churchill, Flin Flon and Sherridon.

The Pas is headquarters also for the forest and fishing industries of the northern part of the province and the metropolis of many mining and railroad men and big game hunters. Its population in 1929 was quoted at 3,200.

Transcona. With a population of 5,019, Transcona headed the list of Manitoba's towns in 1929, according to the report of the Municipal Commissioner. It is located a few miles east of Winnipeg and owes its rapid growth almost entirely to the grain transportation industry. Great storage elevators, huge roundhouses and extensive railway yards have been established within the past two decades.

The town is usually included as part of Greater Winnipeg. Its railway workshops and yards give steady employment to a large number of skilled workers. Other industries are located there also. Its growth is rapid but of a permanent character.

Other Towns. The seven towns having populations between 1,000 and 1,500 are Carmen, Killarney, Morden, Stonewall, Swan River, Tuxedo and Virden. Tuxedo is a part of Greater Winnipeg; Stonewall is located a few miles northwest of Winnipeg; Swan River is the principal centre in the agricultural belt lying between the Porcupine and Duck mountains; and the other four towns are located in the great agricultural area of southwestern Manitoba.

The remaining sixteen towns are, in alphabetical order:—Beausejour, Birtle, Boissevain, Carberry, Deloraine, Emerson, Gladstone, Grandview, Hartney, Melita, Morris, Oak Lake, Rapid City, Rivers, Russell and Winnipeg Beach.

Villages. Manitoba's twenty-two villages are, in alphabetical order:—Binscarth, Brooklands, Elkhorn, Foxwarren, Garson, Gilbert Plains, Gimli, Great Falls, Gretna, Hamiota, Manitou, Napinka, Pilot Mound, Plum Coulee, Roblin, Rossburn, Shoal Lake, Ste. Rose du Lac, Teulon, Wawanesa, Winkler, and Winnipegosis.

Unincorporated Villages. There are a number of villages or hamlets in Manitoba that have not become incorporated as individual municipalities, but which form parts of the rural municipalities in which they lie, or which are located in unorganized districts. Flin Flon, with a population of perhaps 5,000, occupies a temporary site in northern Manitoba adjacent to the Flin Flon mine. When a permanent site is chosen and mining activities get well under way, it will doubtless become incorporated as a town.

RURAL MUNICIPALITIES

Rural municipalities are organized under the direction of the Municipal Commissioner. The senior official is known as the Reeve, and the chief executive officer is the Secretary-Treasurer. Each municipality includes, as a rule, a number of townships, the average being about ten.

Township System. Before the Crown lands of the province were thrown open for settlement or disposal otherwise, they were first surveyed into parcels of the required dimensions according to a regular system of subdivision adopted by the Dominion Government. Certain lands occupied by the original settlers were exempted from this system.

The unit of survey is the township, being a quadrilateral area approximately 6 miles square containing 36 sections, each of 640 acres or 1 square mile, which on being divided into four equal parts gives the familiar quarter-section of 160 acres. The sections are numbered from the southeast corner, westerly across the township from 1 to 6, thence back along the next tier of sections, across again on the next, and so forth, leaving section 36 in the extreme northeast corner. Quarter-sections are denoted according to the quadrants of the compass—northwest, northeast, southwest and southeast quarter-sections respectively.

CHAPTER VII

INDUSTRIES

Manitoba has launched out on an industrial career which promises to be active, extensive and permanent. In earlier days, industrial enterprises, for obvious reasons, were not considered practical or profitable. Raw materials, power facilities and skilled workers necessary for the successful prosecution of such undertakings were not readily or economically available. Hence it was found more expedient to import the finished article even at the cost of heavy transportation charges and loss of valuable time. But no system of wholesale supply, however perfect, can economically supplant the industrial life of a state, and Manitoba is now fast developing industrially.

MANUFACTURING

Manufacturing began in Manitoba in a small and uncertain manner. Chief among the early drawbacks was the lack of coal for power purposes. ~~Since it has been found that the province~~ has more than sufficient water power to compensate for lack of coal this great obstacle has largely disappeared.

Among the many factors necessary for the successful prosecution of the manufacturing industry may be mentioned the following:—(1) abundance of suitable raw material; (2) ample, steady and cheap power; (3) skilled, semi-skilled and common labour; (4) suitable factory sites and living conditions for employees; (5) transportation facilities, and (6) markets. All of these requirements are fully met in the province of Manitoba. In many cases the inducements are more than ordinary.

Supply of Raw Material. A few special factors may here be mentioned. The supply of raw material is most extensive. In this connection, it is only necessary to recall that Western Canada is an agricultural country of major proportions, producing annually upwards of a thousand million bushels of grain, besides live stock, dairy products, vegetables, flax straw and other supplies in like proportion. Since much of the exported farm produce passes easterly through Manitoba, the

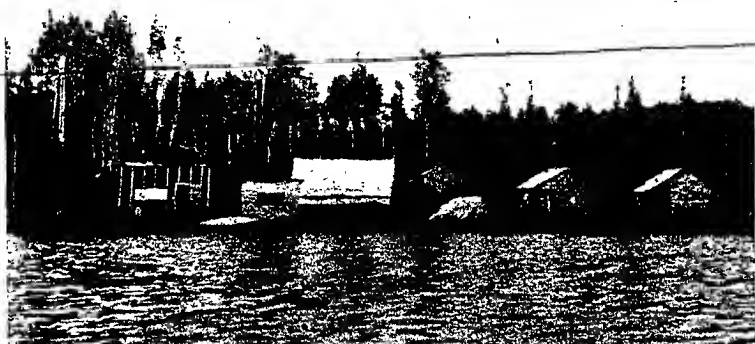
opportunity of securing this class of material is of the best. Winnipeg is the centre of the grain market of Western Canada and St. Boniface that of the live stock market. The products of the forests of Manitoba are no mean consideration, great quantities of pulpwood especially being available. The mineral resources are also extensive, though not as well known. Limestone, gypsum, clays and sandstone are being extensively utilized at present, but a much more varied assortment is available. Raw furs, hides and wool are being shipped out of the province in great quantities:

Water Power. Manitoba is very liberally endowed by nature with water power. The present installations produce a total energy of 310,800 horsepower and are capable of giving an ultimate total of 588,000 horsepower. The total power possibilities of the province at known sites, with storage, have been estimated to be in the neighbourhood of 5,000,000 horsepower. As hydro-electric energy is fast supplanting steam power in manufacturing industries, the supposed handicap of lack of coal is no longer considered in Manitoba. Cheap hydro-electric power for manufacturing has been available in Manitoba for over fifteen years and rates have now been reduced to as low as any in America. Power for manufacturing purposes is exceptionally attractive in the Greater Winnipeg district, including the cities of Winnipeg and St. Boniface and numerous surrounding villages, and in Brandon and Portage la Prairie.

Labour Supply. Labour is now quite plentiful in the cities of Manitoba. Practically all the common skilled trades are represented, while the tides of immigration bring to the country many unskilled workers who drift into the cities. In a following section more information will be found in this connection. Winnipeg is the labour headquarters of Western Canada. Federal and Provincial legislation aims to provide for conditions of ultimate advantage to both employer and employee.

Industrial Sites. In a new country such as Manitoba, the securing of manufacturing sites and of locations for employees' homes is a much simpler matter than in older settled countries. It is to the interest of ambitious towns and cities as well as of transportation companies to see that suitable sites are always available for new industries. Special inducements to manufacturers are offered by some municipalities, while others act in

a more indirect but none the less effective way by providing general conditions that favour such undertakings. The great hydro-electric and domestic water-supply systems of Greater Winnipeg have made the manufacturing prospects of this district peculiarly attractive. Industrial sites with ample railway sidings, cheap power, light, water and other requisites are to be obtained in most centres. Municipal improvements, schools, public utilities and other advantages follow in the progressive manner so evident throughout this new province. Climatic, health, and cost-of-living conditions compare favourably with the best of Canadian or American cities. The initial cost of industrial and home sites in Manitoba is very moderate, building is reasonable, rents are not excessive and in smaller centres are low, and maintenance charges and taxes are quite reasonable.



Original Flin Flon Camp in 1916

Transportation Facilities. In respect to transportation service, Manitoba manufacturers are well situated. Winnipeg and St. Boniface have 27 lines of railways radiating in every direction, as well as steamboat service on the Red river. The Canadian Pacific railway yards here have 320 miles of siding and are the largest individually-owned railway yards in the world. The Canadian National railway yards are on the same gigantic scale. Brandon and Portage la Prairie have equally favourable, though less extensive, transportation facilities.

The market for manufacturers in Western Canada is not only extensive, but is constantly growing. Goods manufactured in Manitoba have a distinct competitive advantage over those made in older countries. From the east, goods must overcome a freight haul of a thousand miles; from the west, they must cross the Rocky mountains; while from the south they have the disadvantage of customs duties. Manitoba manufacturers are able to place their wares on the markets of the prairies without loss of time or excessive freight and customs tolls. They also secure the advantage of sentiment, for the West favours home production. In export trade, there is also much to be gained by having the raw material manufactured on the ground, paying shipping charges on the finished products only.

Growth of Manufacturing. As an indication of the rapid growth of manufacturing in Manitoba it might be mentioned that in 1870, when the province was created, practically nothing was being manufactured commercially. In 1900 the total value of manufactured products was given by statisticians as about \$13,000,000, while in 1928 it had increased to over \$160,000,000. An estimate made by the Industrial Development Board of Manitoba for the year 1929 shows a further increase of \$5,000,000, or a total of \$165,000,000. These figures do not include construction, nor custom and repair industries.

According to the Dominion Bureau of Statistics, the ten leading industries in Manitoba in 1928 were:—slaughtering and meat-packing, flour and grist-milling, railway rolling stock manufacturing, butter and cheese making, electric light and power production, printing and publishing, manufacture of cotton and jute bags, brewing, printing and bookbinding, and bread and other baking.

These ten industries were represented by 413 establishments employing 12,255 persons. The total number of industrial establishments in the province was 871; the number of employees was 21,168; and the capital investment was nearly \$160,000,000.

The payroll for the year was over \$25,000,000; the cost of materials used was over \$88,000,000; and the value of products was practically equal to the capital investment.

Of the 871 industries in the whole province, 491 were located in Winnipeg, 37 in Brandon, 35 in St. Boniface, 14 in

Portage la Prairie, 13 in Dauphin, 7 in Selkirk and 7 in The Pas. The remainder were scattered fairly widely, and included three large establishments in Transcona.

Winnipeg's industrial establishments gave employment in 1928 according to the same source of information, to 18,340 persons, and the gross value of her products was over \$105,500,000. St. Boniface, with 1,557 employees, manufactured products worth \$27,000,000, and Transcona, with 2,168 employees in 3 establishments, turned out products having a gross value of nearly \$6,000,000.

Industrial Opportunities. In the general expansion of manufacturing in Manitoba there are opportunities for the establishing of new industries as well as for the expansion of existing ones. Many varieties and great quantities of finished products that could be manufactured in Manitoba are still imported.

In a report recently issued by the Industrial Development Board of Manitoba there is a list of 52 articles, all of which, it is claimed, present openings for industries in Greater Winnipeg. Doubtless a number of these, and possibly others not mentioned, could be manufactured in other parts of the province.

Preliminary information with respect to industrial opportunities has been collected by this Board, by the Winnipeg Board of Trade and by the Boards of Trade that function in nearly every city and town of the province. Any person contemplating the establishing of an industry may receive, on application, considerable general information from any of these sources. Valuable assistance and co-operation in carrying out final investigations in such matters is to be had from the same sources.

MEAT-PACKING

The live stock production of the prairie provinces is considerable and can be rapidly increased to meet much greater demands. Like the grain business, the live stock business is centralized in Winnipeg, the great stockyards at St. Boniface representing the funnel. Local packing plants absorb but a small proportion of the stock received and, as with grain, the greater part of this production is shipped out of the province.

According to figures published by the Dominion Bureau of Statistics, there were in the year 1928 in Manitoba some six

plants engaged in the slaughtering and meat-packing industry. They represented a capital investment of \$5,029,265. Some 1,309 persons were employed in this industry, the salaries and wages paid during the year amounting to \$1,654,732. The cost of the year's materials was \$15,203,144 and the value of the output was \$18,788,855.

During the same year 75 plants were operated in the whole of Canada, the value of their total production being \$174,096,419. Manitoba's output was thus over 10.8 per cent of the whole. In the year 1923 it was about 9.4 per cent. From these figures it would appear that Manitoba might logically expect a large growth in the meat industry.

THE MILLING INDUSTRY

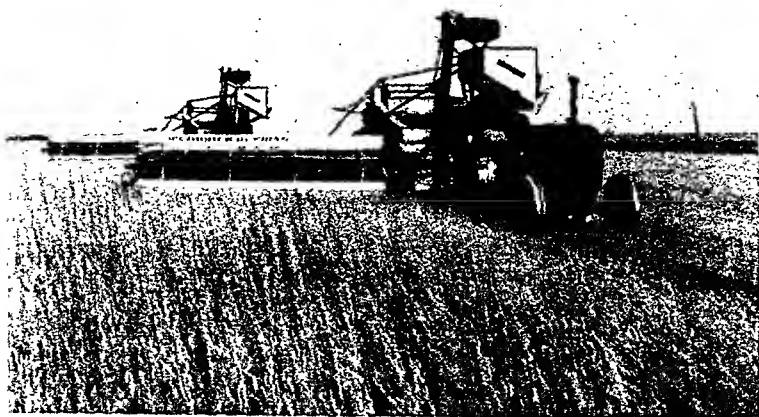
With an abundance of the world's highest grade hard wheat produced or marketed within its borders, plenty of cheap power available in its principal centres and adequate transportation facilities, Manitoba has become a field of primary importance for the miller and the flour dealer.

Milling operations in Manitoba date back over a century, when the early Selkirk colonists, after gathering their crop with the sickle and threshing out the wheat with the flail, ground the kernels into flour with handstones known as querns. A few of these querns are still in existence and are highly valued by their owners as antiques of more than passing interest. As may be readily surmised, the flour thus produced was not to be compared with the product of the scientifically constructed mills of to-day.

Early Milling. The first millwright in the colony was sent out in 1813 by Lord Selkirk, who was ambitious to have his settlers produce enough flour for their own use as well as to meet the requirements of the Hudson's Bay Company. About 1823 the two-horse treadmill was introduced and a little later the Hudson's Bay Company erected a windmill at Fort Douglas. It developed sufficient power to work two pairs of stones, though much time was lost for want of a man who understood its operation. It finally commenced work in 1825 and was the first of several such windmills to grind flour in the colony. Until about the year 1831 the Hudson's Bay Company continued to import quantities of flour from England via the Hudson Bay

route. A census of the Red River colony in 1849 placed the number of mills at 20 of which 2 were driven by water and 18 by wind.

For many years the quality of flour produced was very unsatisfactory. Three main causes were responsible for this, namely, the quality of the wheat itself was inferior, the method of handling the grain was lax, and the milling processes of the day were crude. With the introduction of the Hard Red Fife, Marquis and other species to replace the softer and inferior varieties of early days the quality of wheat has risen and to-day Manitoba hard wheat is the acme of perfection and the cereal most eagerly sought by the milling companies of the world. Cutting, threshing, cleaning, shipping, and storing facilities have improved to such an extent that the percentage of grain damaged is small compared with that of earlier days. The rigid grading system also ensures the miller receiving a better sample.



Combines at Work in Manitoba Grain Field

Advent of New Machinery. The chief factors, however, in bringing laurels to the flour of Western Canada were the improvements made in the methods of milling during the years from 1870 to 1880. By the invention of new machinery and devices the wonderful baking qualities of hard spring wheat were disclosed, and the removal of fine bran substance was made possible. A whiteness of bread was thereby secured in place

of the former dull colour. Western wheat and western flour then rapidly assumed their place as world leaders and to-day the name "Manitoba" as applied to flour signifies the world's best.

The old stone method has almost disappeared. Chilled steel rollers are used exclusively in modern mill equipment. Windmills have also disappeared and power is now derived from steam or electricity. As a rule, the small mills use steam power and the larger mills located in the larger centres use hydro-electric power.

Giant Modern Mills. The capacity of the mills runs all the way from a 20-barrel grist mill in a small village to the great modern mills of the Western Canada Flour Mills, Limited, which are located in St. Boniface. These can turn out 5,500 barrels of flour every 24 hours. According to the Dominion Bureau of Statistics there were 28 flour and grist mills and 10 chopping mills in Manitoba in 1928. These represented a capital investment of \$6,050,473, and turned out products during the year valued at \$18,788,855. There are also a few oatmeal mills in the province, one of which has a capacity of 750 barrels per day.

The Large Milling Companies. Among the great milling companies of Canada which have plants in Manitoba may be mentioned the Lake of the Woods Milling Company, the Ogilvie Flour Mills Company, Limited, the Western Canada Flour Mills Company, Limited, and the Maple Leaf Milling Company, Limited. The head offices of these companies are located in Montreal and Toronto.

The milling industry is firmly established in Manitoba. Owing to the increased settlement of the west and the more intensive methods of agriculture now being practised a greater local demand is created for both milled products and by-products, and the great export trade that Canada has established absorbs all surplus. From 1906 to 1919 Canada's export of flour increased in round numbers from 900,000 barrels to over 9,000,000 barrels, or 1,000 per cent in 13 years. It is also interesting to note that over 90 per cent of the stocks, bonds and other securities of incorporated and joint stock companies in the flour and cereal milling industry of Canada are owned in Canada.

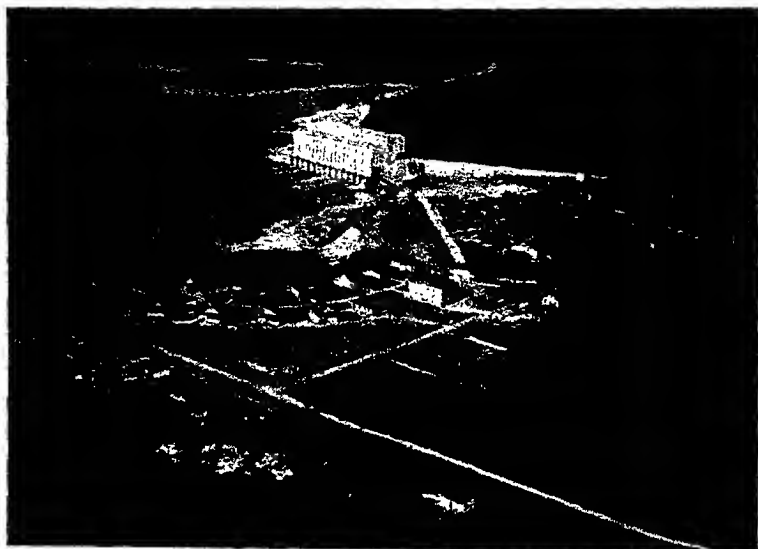
RAILWAY ROLLING STOCK

The third largest manufacturing industry in Manitoba, in 1928, according to the Dominion Bureau of Statistics, was that devoted to railway rolling stock. The tremendous increase in railway mileage on the prairie provinces during the present century and the corresponding expansion of the volume of freight moved has made necessary the establishment at some convenient western point of yards and shops capable of keeping up an ample supply of rolling stock. These have been centralized to a great extent in Transcona.

Over three times as many workers are employed in this industry as in any other single manufacturing industry in Manitoba. According to the statistics of the Bureau there were 3 industries in this class in 1928 representing a capital investment of \$8,521,649, employing 4,164 hands and paying in salaries and wages for the year the sum of over \$6,000,000. The value of the year's output was given as \$11,242,505.

HYDRO-ELECTRIC DEVELOPMENT

The fifth place among the manufacturing industries of Manitoba, based on the value of products, was held in 1928 by



Aerial View of Great Falls Development

the electric light and power industry. This is a comparatively new industry in Manitoba and its growth and development have been spectacular. The industry promises to continue its rapid expansion, as the province is liberally endowed with water powers, which are being harnessed to produce nearly all of the electric energy used. The demand for power by the many other industries of the province actually exceeded the supply during the fall months of 1930 and new power plants and transmission lines were being constructed with the greatest possible haste. In the future development of mining and forest industries, as well as of manufacturing plants located in urban centres, there will be increasing demands for electric power and light. The rapidly increasing use of these modern utilities on the farms, made possible by the extension of the Manitoba Power Commission's transmission lines, has opened up another permanent and growing field.

The industry differs from all others in that its principal investments are in capital and its lowest in materials used. In 1928 it was represented by 39 establishments having a capital investment of nearly \$47,000,000, a sum over five times as large as that of any other manufacturing industry. Its employees numbered 1,355 and its products for the year were valued at \$6,800,000.

Hydro-electric development in Manitoba is under the very close supervision of the Government. Much of it is actually being done by the Government. The field for electric energy is increasing rapidly. The factors entering into its development are permanent and favourable. The investment opportunities in this industry are of an attractive nature.

THE MINING INDUSTRY

With the commencement of actual mining and milling operations late in the fall of 1930 at the great Flin Flon copper-zinc mine in northern Manitoba, the province entered the ranks of large-scale mineral-producing areas. Its mining activity assumed an entirely new aspect, passing from a small and experimental stage to the status of a major industry.

Early Mining. Mining in what is now Manitoba began about the year 1800 with the production of salt by evaporation from some of the numerous brine springs abounding west of

lakes Manitoba, and Winnipegosis. Local salt supplied the wants of the people for many years.

Then came the quarrying of limestone for local building purposes, and for the making of lime. An industry of considerable importance was developed in the production of the beautiful Upper Mottled or Tyndall limestone, and this industry is being expanded by the export of large quantities.

The mining and calcinating of gypsum followed and the gypsum industry has become firmly established. Clay working industries also were organized in several localities.

With the finding of material suitable for making natural and Portland cement, a cement industry was begun, and it has had good success.

Attempts to establish a glass industry based on ample supplies of raw material did not prove very successful, though for a time glass bottles were manufactured. It is anticipated that this industry will be revived.

A little coal for local consumption has been mined in the southwest part of the province. A few minor attempts have been made to develop a peat industry.

Non-metallic Production. Up to the year 1911, Manitoba's mining industry was confined to its non-metallic resources. In fact little attention was paid to the possibilities of finding metals in commercial quantities for, prior to 1912, the boundaries of the province did not include the vast northern Precambrian areas that were added that year. Commencing about 1911, prospecting for metallic ore bodies assumed a decided impetus. During following years many discoveries were made but until 1917 no production of metallics was recorded.

The production of non-metallics in 1928, the last year for which final figures are available at the time of writing, was valued, according to the Dominion Bureau of Statistics, at \$3,776,256. This value was made up of the following items:—gypsum, \$609,039; natural gas, \$60; quartz (rose quartz) \$360; cement, \$1,685,084; clay products, \$291,791; lime, \$319,699; sand and gravel, \$262,006; and stone, \$608,217.

New Mineral Fields. In 1911 the first gold-bearing claims in Manitoba were staked in the Central Manitoba district on the shores of Rice lake. The following year several

claims were staked on the shores of Amisk (Beaver) lake in northern Saskatchewan and prospectors soon found their way across the line into Manitoba, where thousands of claims have been staked for gold and for copper. Later, indications of a variety of rare minerals were found in the southeastern part of the province.

Three large mineral fields have come into prominence as a result of these activities. They are popularly known as the Central Manitoba district, the Northern Manitoba district and the Boundary district.

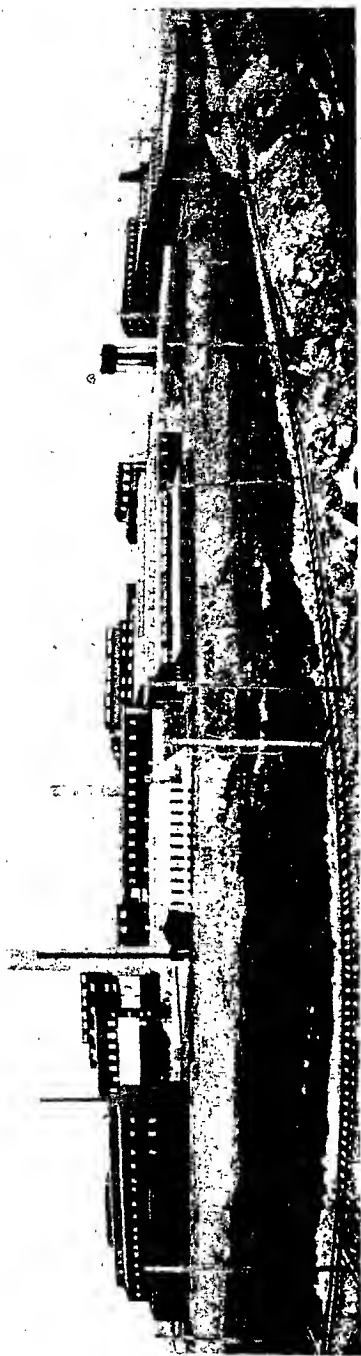
The Central Manitoba District. This district extends from the southern part of lake Winnipeg to the Ontario boundary. The heart of it is about 100 miles from Winnipeg, which is headquarters for its activities. After several years of fitful development, during which time small productions of gold were made by a few mills, the Central Manitoba Mines commenced steady operations in 1927 on the Kitchener group of claims. The following year this company's mill produced 19,813 ounces of gold and it has been a consistent producer since.

Development has been fairly continuous on the San Antonio and the Gem Lake mines. These and other properties give promise of adding materially to the gold production of this district.

The Northern Manitoba District. This district lies north of the Saskatchewan river, lake Winnipeg and the Nelson river, and south of the Churchill river. It extends eastward from the Saskatchewan boundary an undetermined distance, but at least 125 miles. The Pas is its general headquarters though there are now branch railways into its largest mines.

The Northern Manitoba district is an extensive one and is highly mineralized. It has become well known as the home of the Flin Flon, Sherritt-Gordon and Mandy copper-zinc and copper mines. It has also large gold-bearing areas, particularly about Wekusko (Herb) lake, and has witnessed the development of a number of gold-producing claims.

The Boundary District. This district adjoins the Ontario boundary in the vicinity of Shoal lake in the southeastern part of Manitoba. While it is not yet a producing district it is of particular interest for a wide variety of unusual mineral occurrences. Reference to these is made in the alphabetical list of



The Flin Flon Mine Plant in 1930



St. Boniface Stock Yards

minerals appearing in the chapter on natural resources. (Ch. IV, Natural Resources—Minerals.)

The Flin Flon Mine. The Flin Flon ore body is a massive deposit of copper-zinc sulphide carrying also values in gold and silver. It is located on Flin Flon lake about 70 miles northwest of The Pas, and was discovered in 1915. Its development history, covering a period of 15 years, records many interesting experiments and a succession of negotiations with various mining interests. The property finally passed into the control of the Hudson Bay Mining and Smelting Company, Limited, and active mining operations are being carried on by a company organized as Flin Flon Mines Limited.

In 1930 there was completed a huge mine plant including a flotation mill with cyanide annex, copper smelter, electrolytic zinc plant and other works. Railway service was provided by the building of an 88-mile branch line from the Hudson Bay railway and hydro-electric power was supplied from the Churchill river.

The capacity of the plant makes possible the mining and treatment of 3,000 tons of ore a day. Each unit was put into operation as completed and before the end of 1930 the whole plant was being operated, though not to its full capacity. Normal employment will be afforded about 1,000 persons. A temporary town of about 5,000 population has sprung up in the vicinity but plans for the construction of a more permanent town on a better site are under way.

The Mandy Mine. The Mandy ore body was discovered in 1915 also and is located on the shore of Schist lake about 4 miles southwest of Flin Flon. It was found to consist of massive chalco-pyrite averaging about 20 per cent copper with additional values in gold and silver, and greater quantities of lower grade copper-zinc sulphide ore.

During the years 1917, to 1920 inclusive, 25,000 tons of ore were mined, and transported by sleigh, boat and rail to a smelter at Trail, British Columbia, for treatment. The value of copper recovered exceeded \$2,000,000, and that recovered in gold and silver was considerable. Operations were temporarily suspended when no longer profitable under such unusual conditions, but with the prospect of being able to have the ore treated at the Flin Flon smelter, there has been a renewal of activity.

The Sherritt-Gordon Mine. The Sherritt-Gordon property consists of a number of claims in the immediate vicinity of Camp lake and lying east of the southeast bay of Kississing, or Cold lake. It is now made accessible by a branch railway 42 miles in length which connects at Cranberry Portage with the Flin Flon branch of the Hudson Bay railway. The ore body is very extensive. Its principal value is in copper with zinc a major value also. In addition, there are values in gold and in silver.

Development work has been pushed forward rapidly. It includes the sinking of two shafts and the erection of a 1,500 ton concentrator as well as the construction of necessary camp buildings, roads, power transmission lines and other undertakings. Plans call for the treatment of ores at the Flin Flon smelter.

The town of Sherridon has grown up in the vicinity of these developments, which have now practically reached the production stage. It is expected that the Sherritt-Gordon will rank in production with the Flin Flon.

Total Mineral Production. Previous to the year 1909, the value of Manitoba's annual mineral production did not reach the million dollar mark. During the 20-year period from 1909 to 1928 it varied from slightly over one million to well over four million dollars annually, production being chiefly non-metallic. In 1928 metallics accounted for \$410,597, made up of gold, \$409,571, and silver, \$1,026. Copper was not represented that year. Up to 1928, the gold production of the province was trivial, that of 1927 being valued at only \$3,762.

The production of gold from the Central Manitoba district in 1928 set a new record which, it is hoped, will be maintained and increased. With the coming into operation of the great Flin Flon, Sherritt-Gordon and Mandy mines in the Northern Manitoba district, and possibly others, the value of metallic production, including particularly copper and zinc, as well as gold and silver, is being tremendously increased.

OTHER INDUSTRIES

Butter and cheese making is now a leading industry of the province, ranking fourth in 1928. The making of cotton and jute bags is extensively prosecuted and printing and book-binding has also assumed important proportions.

The printing and publishing business has been developed probably to a greater degree than any other in the province. Winnipeg perhaps publishes a greater number of periodicals in a greater variety of languages than any other city in Canada or any of equal population in America. It issues two daily newspapers, the *Free Press* and the *Tribune*, that rank with leading dailies anywhere on the continent. Brandon, Portage la Prairie and The Pas also publish daily newspapers, while practically every town of any pretence has its local weekly.

The building and construction industry in Manitoba has fluctuated from year to year according to the general prosperity of the people, the requirements of incoming settlers and the rise and fall of the financial barometer. Great building booms followed the advent of the railway and were succeeded by periods of severe reaction. The early years of the twentieth century witnessed a boom in railway construction accompanied by tremendous strides in building which attained a peak about the year 1912. The outbreak of war had a most disastrous effect on these industries and only during the past few years have they begun to approach normal.

A pulp and paper mill has been put into operation. Highway construction is rapidly progressing. Reclamation schemes are being investigated. New territories are being opened up.



Pulp and Paper Plant, Pine Falls

Fur farming has been successfully established and in many ways the industrial life of the province is quickening.

Among other industries that appear to be on the eve of development in Manitoba may be mentioned glass works, canning of small fruits and vegetables, chemical works, the sugar-beet industry and the more intensive and extensive utilization of such products as raw hides, wool, flax and hemp.

LABOUR*

Labour Legislation. The Provincial Bureau of Labour administers the Factories Act, Shops Regulation Act, Bake Shops Act, Public Buildings Act and Building Trades Protection Act. The Factories Act prohibits the employment of boys under 14 and girls under 15, and limits the hours of boys under 17 and girls under 18 to 9 a day or 54 a week unless arrangement is made for a short Saturday. On not more than 36 days in the year, longer hours may be permitted under special circumstances to persons over 17. The Act contains provisions for the safety and health of factory workers.

The Workmen's Compensation Act provides for a provincial fund administered by a provincial board and made up from assessments on employers, the rate of assessment varying according to the hazard of the industry. Compensation is payable for accidents occurring in the course of employment or for certain industrial diseases. In case of death a maximum of \$150 is allowed for burial expenses and the widow or invalid widower is entitled to a pension of \$30 a month with an additional allowance of \$12 a month for the eldest child, \$10 for the second child, \$9 for the third and \$8 for each other child, no pension being payable in respect to children over 16 years of age unless they are invalids. For orphans, the monthly pension is \$15 for each child under the age of 16. In case of total disability the allowance is equal to $66\frac{2}{3}$ per cent of the average earnings during the period of disability. Average earnings are not to be deemed to exceed the rate of \$2,000 a year. In case of partial disability, compensation is to be $66\frac{2}{3}$ per cent of the difference between the average earnings before and after the accident. No compensation is payable for the first three days

*Data supplied by Department of Labour, Ottawa.

of disability. An injured workman is entitled to all medical, surgical and hospital services.

The Minimum Wage Act authorizes a provincial board to fix minimum wages and maximum hours for female workers in shops, factories and mail order houses in the cities of the province. There are also laws providing for the inspection and regulation of mines, shops, steam boilers and elevators. The Fair Wage Act requires the payment of current rates of wages to workmen employed on provincial public works. The Dominion Industrial Disputes Investigation Act was made applicable to disputes within the province by a statute of 1926. The Dominion Old Age Pensions Act is also in force in Manitoba. Under the Child Welfare Act, allowances are payable in respect of one or more children under 14 years of age of widowed mothers and mothers whose husbands are unable to support them through physical or mental disability.

Employment Service. Permanent offices of the Employment Service of Canada are maintained in the municipalities of Brandon, Dauphin and Winnipeg. In addition, a temporary office was opened during the summer of 1930 at Portage la Prairie. These offices offer, free of charge, facilities for both men and women who are seeking work in any occupation and for employers seeking any sort of help. They are administered and controlled by the Provincial Government of Manitoba and form part of a nation-wide system of free employment offices known as the Employment Service of Canada. The Federal Government, under authority of the Employment Offices' Co-ordination Act, contributes certain monies to the provinces to assist them in the maintenance of their offices and provides the necessary machinery linking them into a co-ordinated national system. The better distribution of labour as between localities is further facilitated by a concession granted to the Employment Service by the railways in the form of a reduced transportation rate to bona fide applicants proceeding to distant employment. During the year 1930, 4,617 persons benefited by this special rate through the offices in Manitoba, 2,436 going to employment in localities within the province and 2,181 to work situated in other provinces. There were 44,013 persons placed in employment through the Manitoba offices during the year.

Wages. Wages in Winnipeg in January, 1931, were as follows: Bricklayers, \$1.45 per hour; Carpenters, \$1.10; Painters, 95c.; Plumbers, \$1.25; Sheet-metal workers, 90c.; Electricians, \$1.10; Building labourers, 42½ to 50c.; Civic labourers, 30 to 45c.; Common labour in factories, 30 to 45c.; Street railway motormen and conductors, 60c.; Printers and news compositors, \$47 per week of 46 hours.

In Brandon, wages were about 10 per cent lower in the skilled trades. For common labour they were about the same as corresponding wages prevailing in Winnipeg.

Cost of Living. The cost of living in Manitoba compares favourably with that in any other part of Canada. Following are a few representative retail prices as prevailing in Winnipeg in January, 1931: Sirloin steak, 31.6 cents per pound; Shoulder roast, 16.4; Mutton, leg roast, 26.6; Pork, leg roast, 24.7; Butter, creamery, 37.2; Sugar, 7.1; Milk, 12 cents per quart; Bread, 5.6 to 6 cents per pound; Potatoes, 21.9 cents per peck (15 pounds); Coal, anthracite, \$19.50 per ton, western domestic \$12; Rent, six-roomed workingmen's houses, \$25 to \$50 per month according to location and conveniences.

CHAPTER VIII

COMMERCE AND FINANCE

Manitoba is primarily a grain-growing country and consequently a large share of the commerce and finance of the province is directly connected with the farming industry. The marketing and movement of the crop is commonly referred to as "the grain business."

THE GRAIN BUSINESS

In countries where but little grain is grown, where it is held longer and marketed more leisurely by the producer, where local millers are the chief purchasers, and consequently export of unmilled grain is limited, the disposal of the crop is not spectacular. In Manitoba, however, it is accentuated by the peculiar conditions prevailing. An immense quantity of grain for export is produced; it is thrown on the market like an avalanche as soon as threshing operations are under way; and its movement towards the ultimate consumer is hastened by reason of great distances involved and a short open season. The buying and selling of this large quantity of grain and its grading, cleaning and sorting, loading and shipping, involve transactions in finance and transportation of gigantic proportions and feverish haste.

Transactions commence when the farmer arrives at his local railway station with a load of freshly threshed grain and is met by the elevator operator. In earlier years buyers received their grain in flat warehouses. The tremendous increase in the production of grain soon made necessary a more expeditious method and the old flat warehouse in Manitoba gave way to the more efficient elevator.

Grain Elevators. As suggested by the name the grain is "elevated" in the new style warehouse, machinery being utilized to raise it to a height above the bins into which it is allowed to flow under control. Rows of these tall, sentinel-like structures along special sidings at every railway station throughout the western farming areas are familiar sights to the traveller

in these provinces and objects of peculiar interest to the new-comer.

Grain is now delivered to these elevators in bulk by the farmers. Wagons, drawn by two, or sometimes four horses, with specially constructed grain boxes, bring from 60 to 100 bushels at a trip. The wagon is driven to a platform scale and the gross load is weighed. The grain is then dumped into a hopper below the wagon, the empty wagon is weighed and the net weight of grain arrived at. Motor trucks are now being used to a considerable extent in place of horse-drawn wagons.

Conveyors then elevate the grain into the desired bin, power for driving the machinery being derived from a stationary gas engine or a hydro-electric line. The receiving of the grain is thus simplified as well as its loading into a car. The elevation of the grain into a shipping bin enables the operator to take advantage of the flowing qualities of grain and the action of gravity. With a system of spouts he has only to let loose the contents of this bin and direct its flow into a car on the elevator siding below. A car may be thus loaded in about twenty minutes.



Depot and Elevators, Dauphin

These elevators are known as "Country Elevators" receiving grain for storage before it has been inspected. There are also "Private Country Elevators" which are exempted from the obligations to handle public grain. In Manitoba in 1930 there were 383 country elevators having a combined capacity of 24,130,400 bushels.

Loading Platforms. Some farmers preferred to load from platforms and a demand was made for the privilege of shipping grain direct in carload lots without the intervention of the elevators. This gave rise to a system of loading platforms, which railway companies are now compelled to provide at stations where there is sufficient demand. Under this method the farmer makes application for a car, which is placed at his disposal alongside the platform, and he is given a certain time in which to load it. His grain is then hauled on the platform and shovelled by hand into the car. The use of the platform, as may be readily understood, is restricted to those farmers living within easy reach of the station and to those who have sufficient grain to make up a car lot.

If the farmer sells his grain upon delivery to the elevator company it is known as street grain. He may, however, have it placed in the elevator in a special bin which he can hire, in which case it is known as special binned grain, or he may store it with other grain of the same quality. In either case he arranges for a car and has the elevator company load the car for him, paying them storage and loading charges. When his car is loaded either from the elevator or from the loading platform he may sell it on the track as track grain or ship it consigned to the commission merchant.

Shipping the Grain. Box cars are used for carrying grain, which is loaded in bulk. Their capacity ranges from 60,000 pounds to 115,000 pounds, which, in the case of wheat, is equivalent to 1,000 to 1,916 bushels. Greater quantities of the lighter grains may be carried. The average car will carry 1,330 bushels of wheat, 2,000 of oats, 1,400 of barley, 1,230 of flax or 1,230 bushels of rye. The cars are provided with inner doors reaching up to the loading line, a space being left between the grain and the roof of the car to allow loaders and inspectors room for movement. The outer doors are closed and sealed before shipping and the car's identity kept by means of its number.

Winnipeg, the "Funnel." Practically all the grain exported from Manitoba and much of that from Saskatchewan and Alberta is shipped eastward. As the railways of the prairies converge at Winnipeg, this city, by reason of its strategic location, becomes the funnel of the grain movement. Though the grain continues by rail some 425 miles farther to the head of lake navigation at Fort William and Port Arthur, the intervening country is not an agricultural one, and Winnipeg thus loses none of its mobilization advantages. Being nearer the fields of production it has the advantage of closer communication and has thus become one of the greatest grain-trading centres on the North American continent.

Government Regulations. As the grain business in Western Canada grew in volume it became necessary for the Federal Government to enact various forms of legislation regulating it. These were finally consolidated and embodied in "The Canada Grain Act." The Act creates a Board of Grain Commissioners for its administration and lays down certain rules, principles and standards pertaining to the buying and selling, weighing and grading, loading and shipping, and generally the performance of all transactions pertaining to the grain trade. It establishes statutory grades of grain, provides for the regulation of the operation of elevators, the hearing and investigation of complaints, and generally aims to guarantee to the grain grower, as far as possible, fair dealings in the disposal of his products.

The Canada Grain Act defines various grades of grain by which value may be adjudged, and various general classes depending on its quality. The value of wheat, for instance, depends on many factors which may influence its milling and baking qualities. The kernels may be sound and plump but with the wheat may be admixtures of foreign or weed seeds or other cereals; the kernels may be diseased by smut or ergot; they may be damaged by frost or rust; the wheat may be dirty, heated, bin-burnt, tough or damp; the colour and hardness of the kernels may vary; or other defects may be found which detract from its value. The determining of a proper category for a quantity of grain is known as grading it. Certain statutory grades are fixed by the Canada Grain Act which are constant and do not vary from year to year and the Board of Grain

Commissioners is empowered to set other commercial grades from year to year depending on prevailing conditions.

Grades of Wheat. In Manitoba there are five statutory grades for hard red spring wheat, namely, No. 1 Hard, and Nos. 1, 2, 3 and 4 Northern. There are also statutory grades for durum wheat, oats, barley, rye and flax. To be graded No. 1 Hard, wheat must be sound and well cleaned, weighing not less than 62 pounds to the bushel, and must be composed entirely of Marquis or a variety equal to Marquis.

The Western Grain Standards Committee defines the commercial or lower grades. It has set two additional grades for red spring wheat. There are thus seven principal grades of western hard red spring wheat, as well as grades of white spring wheat, durum wheat and winter wheat and other cereals. Each of these grades is subject to further divisions according to the condition of the grain or the general class into which it falls.

The Canadian Grain Act divides grain into five general classes as follows: Statutory grades, commercial grades, rejected grain, condemned grain, and no grade. The statutory grades include the grains of highest quality and the commercial grades that of more varied quality. "Rejected grain" means all grain that is unsound, musty, dirty, smutty, or sprouted, or that contains a large admixture of other kinds of grain, seeds or wild oats, or that from any other cause is unfit to be classed under any of the recognized grades. "Condemned grain" means all grain that is in a heating condition or that is badly bin-burnt, whatever grade it might otherwise be. "No grade" means good grain that has an excessive moisture, being tough, damp, or otherwise unfit for warehousing.

Wheat of any grade mentioned may also fall under any of these various classes, thus giving rise to a fresh variety of grades. The highest grade of grain, of course, commands the highest price, and with each lowering of grade there is a corresponding lowering of price. The fixing of the grade becomes a delicate task and one requiring great skill, as on it depends the price at which the grain will be sold. It is also important that the grading be uniform as all grain belonging to any particular grade, on reaching the great terminal elevators, will probably become mixed.

Inspection Staff. The inspection and grading is done by a staff of Government experts under the provisions of the Canada Grain Act. There is a chief inspector, while the Dominion is divided into two inspectorates: the Western Inspection division, extending from the Great Lakes to the Pacific coast, and the Eastern Inspection division extending from the Great Lakes to the Atlantic coast. Headquarters for the Western division are located at Winnipeg, where much of the work is done. Other inspections, however, are made at Edmonton, Calgary, Moose Jaw, Saskatoon, Fort William, Port Arthur, Duluth, Vancouver, Montreal, Quebec, Saint John and Halifax. The importance of uniformity in grading, and the impossibility of maintaining stations at every shipping point, makes the centralization of the work advantageous, and as Winnipeg is a point of unusual vantage the inspection of the bulk of western grain is done there.

The Winnipeg inspection offices are located in the Grain Exchange building and during the busy season the inspection is carried on with great despatch. Train loads of grain are constantly arriving. As soon as a train arrives gangs of men are set to work to secure samples from every car and take them to the inspection rooms. Great care must be exercised in securing true samples and in keeping accurate record of the car from which each is taken. An official breaks the seal of a car door, a sampler enters and by means of an instrument commonly known as a stabber secures from seventy-five to one hundred samples from every part of the car, another official receives them in little bags with cards containing the necessary information and a sealer again seals up the door. A good gang can secure samples from a train of forty-five cars in about an hour.

The samples are then taken to the inspection office where a clerical staff makes out information sheets for each sample, passing the samples on to the inspectors under identification numbers only. The weight of the grain per bushel is determined by the inspectors, the admixture of weed seeds estimated, this being known as setting the dockage, the moisture contents ascertained and other factors noted. The grade is finally arrived at and recorded, after which the clerical staff prepares a certificate on which the car represented is sold.

Meanwhile the car is proceeding on its way to Fort William or Port Arthur, but as the freight trains move somewhat slowly

the inspection office is able to get a report by express to the terminal office in advance. This permits of the car being emptied immediately upon arrival into the proper bin, as all grain of the same grade may now be mixed. It also advises regarding any car which for certain reasons, such as overloading, could not be inspected, or in case a re-inspection is required. If the owner of a car is not satisfied with the grade given he may call for a re-inspection which is made without extra charge at the terminal. If still dissatisfied an appeal may be made to a survey board. If no change is made the charge for this is three dollars, but if the grade is raised there is no charge.

When the grain is finally received in the terminal storage elevators it is weighed under the supervision of a chief weigh-master, who has charge of all the weighing under the Board of Grain Commissioners. The grain, being weighed, then loses its identity and the shipper receives a certificate crediting him with a certain weight of a certain grade of grain. This is negotiable collateral on which future sales are made.

Terminal and Mill Elevators. Differing in many respects from the country variety of elevators—chiefly in size to the general public but in purpose to the grain dealer—are huge elevators located at strategic shipping or manufacturing points that receive grain for temporary storage pending the completion of its transfer to its ultimate destination. There are private, semi-private and public terminal elevators operating under particular forms of licences issued by the Board of Grain Commissioners. Generally speaking these elevators are for the storage of grain after it has been inspected, or, in the case of manufacturing or mill elevators for the storage of grain for manufacturing purposes.

In Manitoba, 1930, there were 5 manufacturing elevators having a combined capacity of 1,362,000 bushels and 14 private elevators having a combined capacity of 4,070,000 bushels. The greatest storage capacity for western grain is at the head of the lakes at Fort William and Port Arthur where 34 elevators have a gross capacity of 86,942,210 bushels.

The Grain Fleet. On the Great Lakes there now operates a fleet of especially constructed grain-carrying boats. The carrying capacity of these boats is enormous and the speed at which they are loaded from the terminal elevators is astonishing. A single boat will carry three hundred cars, or seven train loads

of grain. Lying alongside the huge terminal elevators, which are built at the water's edge at Fort William and Port Arthur, they are loaded at the rate of 75,000 to 100,000 bushels per hour. The Lake Shippers' Clearance Association has been formed as a voluntary organization to facilitate the grain shipping business on these lakes.

Considerable western grain is now finding its way to Europe by way of Vancouver and the Panama canal. In 1930 the foundation for a large terminal elevator was laid at Churchill. The completion of the elevator in 1931 and the inauguration of grain shipping by the Hudson Bay route are anticipated.



The Grain Exchange Building, Winnipeg

Winnipeg Grain Exchange. It may readily be imagined that Winnipeg would naturally become the dominating grain market of the West, and such is the case. The business has centralized in the Winnipeg Grain Exchange. This institution was incorporated in 1891 and seventeen years later it was reorganized as a voluntary association of grain dealers. At first there were only ten members and the entrance fee was fifteen dollars. Now there are over four hundred and fifty members and seats are worth about eleven thousand dollars each. The Grain Exchange occupies a magnificent building erected at a cost of over two million dollars by The Traders Building Association, Limited, and the staff employed now numbers over two thousand persons.

In this building the Government Inspection offices are located and also the head offices of the Board of Grain Commissioners. It is the meeting place of buyers and sellers of grain and the great room in which the transactions culminate is known as "The Wheat Pit." The charge to the farmer for selling grain is fixed by what is known as commission rule and is uniform for every customer. For wheat it is one cent per bushel.

Within the Grain Exchange is an independent corporation known as the Winnipeg Grain Exchange Clearing House. The functions of the Clearing House are to simplify and facilitate trading operations between the members of the Exchange and at the same time to guarantee absolute security in all transactions concerning the future delivery of grain. Considerable dealing is done in futures. That is wheat may be sold to be delivered during some month considerably in advance of the date of the transaction. Millers, for instance, may buy a year's wheat in advance to be delivered in certain quantities each month.

Grain Growers' Associations. One of the most notable results of the remarkable growth of Western Canada's grain business has been the action of grain growers themselves in enlarging the sphere of their activities and influence beyond the mere farming phase. Not satisfied in earlier times with the treatment received from elevator operators, railway companies, buyers and shippers generally, they organized many years ago for the purpose of compelling government action in legislat-

ing control of the business, and the Canada Grain Act is largely the outcome of their agitation. The movement resulted in the following great associations rapidly springing into being, namely: in Manitoba, The Manitoba Grain Growers' Association, now The United Farmers of Manitoba; in Saskatchewan, The Saskatchewan Grain Growers' Association, now The United Farmers of Canada, Saskatchewan section; and in Alberta, The United Farmers of Alberta. The political field was invaded, and, as a result, the year 1921 witnessed a Farmer Government in control of the Alberta Legislature and that of 1922 another in control of the Manitoba Legislature. Varying success has been attained also in the Federal arena.

Co-operative Grain Companies. The farmers then organized trading companies along co-operative principles, in which they themselves are the shareholders. The first of these was The Grain Growers' Grain Company. It was organized in 1906 without government aid and was inter-provincial in character. In 1913, The Alberta Farmers' Co-operative Elevator Company was organized for the province of Alberta, with provincial aid. In 1917 these two companies were amalgamated as United Grain Growers, Limited. Another large company is The Saskatchewan Co-operative Elevator Company, organized in 1911, on a provincial basis and with government aid. United Grain Growers, Limited, handles grain and live stock in consignment and also supplies farmers with general commodities. The Saskatchewan Co-operative Elevator Company handles only grain.

The Wheat Pool. During the war of 1914-18 a Board of Grain Supervisors of Canada was appointed by the Dominion Government under the War Measures Act to control the disposition of the grain crops. Offices were established in Winnipeg and the crops of 1917 and 1918 were marketed under the control of this Board. After the war it was replaced by the Canadian Wheat Board which disposed of the crop of 1919. In the disposal of grain, the Board adopted a scheme whereby the producer received an initial payment and a participation certificate which entitled him to a further payment when all returns were pooled.

The demand for some form of centralized marketing grew out of the farmers' experience with these Boards. To replace

the Canadian Wheat Board, which was discontinued in 1920, a voluntary Co-operative Pool was suggested. After extensive preliminary negotiations, three Provincial Pools were organized on the prairies, one in Alberta which opened for business in the fall of 1923, and the other two in Saskatchewan and Manitoba respectively, in the summer of 1924.

As a central selling agency for these three Pools, the Canadian Co-operative Wheat Producers, Limited, was organized under Dominion charter, in 1924. This organization is commonly known as the Canadian Wheat Pool. Its governing body consists of a Board of nine directors, three of which are elected by and from, and are responsible to, each of the Provincial Boards. The head office of the Canadian Wheat Pool is in Winnipeg and there are several branch offices elsewhere.



Aerial View of Centre of Winnipeg

Of the seven crops of the years 1923 to 1929, both inclusive, the Pool handled 1,056 million bushels of wheat and 115 million bushels of coarse grains. Since 1924 it has handled from 51 to 54 per cent of all the wheat delivered by farmers in Western Canada. According to statements issued in the summer of 1930, it was then operating 1,636 country elevators with a total capacity of 57,550,000 bushels, and 12 terminal elevators with a combined capacity of 36,426,250 bushels.

MERCANTILE BUSINESS

The mercantile interests are widely represented and highly developed in Manitoba. Especially is this true of the wholesale distributing houses. Winnipeg's wholesale business has grown with wonderful vigour. It is difficult to arrive at even an approximate estimate of the volume of a single year's business, but figures compiled by the Winnipeg Board of Trade a few years ago showed principal imports during a one-year period in excess of 26,000 carloads.

Brandon is also making rapid progress in the wholesale business. Its situation in the heart of one of the world's finest wheat belts and its excellent transportation facilities give it an unusual advantage in the handling of agricultural supplies. Many such lines are manufactured locally and large quantities are imported.

Large Retail Business. Winnipeg is, of course, easily, the third largest retailing centre in Canada, with over 2,000 stores. Included are a number of the largest and finest in Canada and a few that compare favourably with any in America.

BANKING AND INSURANCE

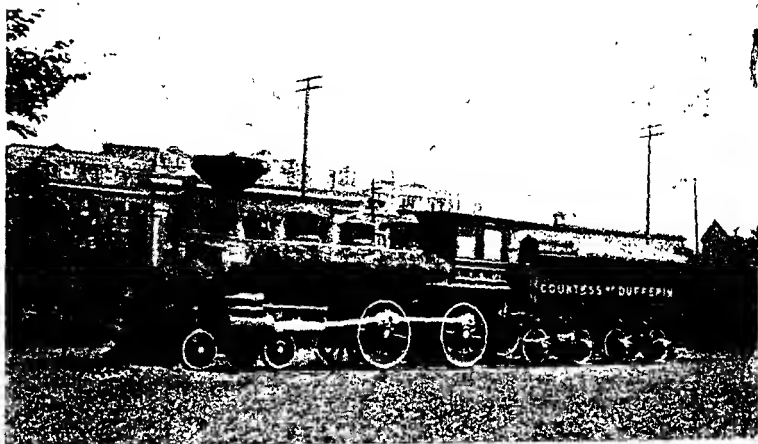
Winnipeg is the financial and commercial centre of Manitoba, as indeed it is also of the whole middle West. Most of the chartered banks of Canada are represented by several branches. The city is also the headquarters of a number of important loan, mortgage, insurance and financial institutions operating in Western Canada.

Banks. Eight of the eleven chartered banks of Canada are represented in Manitoba. At the close of 1930, they had in all 241 branches in this province, as compared with 4,291 in the whole of Canada. In Winnipeg these eight banks were represented with a total of 69 branches. Brandon has 5 branches, St. Boniface has 6, and Portage la Prairie has 4. There are a couple of private banks also in Winnipeg.

Insurance Companies. As the leading financial city of the West, Winnipeg is the centre of the activities of insurance companies doing business in that portion of Canada. A number of these have their head offices in that city and some, through

community of interest, are associated with trust and mortgage institutions.

The Manitoba Insurance Act requires that the companies incorporated to do an insurance business in Manitoba take out provincial licences. Companies under Dominion licence are required to secure certificates of registration from the province. As at December 31, 1928, there were thirty licensed insurance companies and fraternal societies doing business in the province, two hundred and thirty-eight doing business under certificate of registration, seventeen underwriters' agencies holding permits under the Manitoba Insurance Act, and seven reciprocal exchanges licensed in the province.



Canadian Pacific Railway Depot and Pioneer Locomotive, Winnipeg

Mortgage and Loan Companies. As Winnipeg is the great banking centre of the middle West so also is it the centre of the operations of mortgage and loan companies. The prairies with their thousands of acres of farming land require large sums to finance agricultural operations and therefore the farm mortgage loan business is a very large one. Loaning institutions, many of them supplied with funds from Great Britain, France, the Netherlands and other foreign countries, have offices in Winnipeg. Some of the largest investment companies in the Dominion make Winnipeg the central point for their operations, which extend over the entire West.

Government Savings Office. Savings Offices were opened by the province in 1920, as the Act states "to encourage the thrift and welfare of the people." In no sense are these offices considered to be banks; they are merely convenient places for the deposit of moneys by the residents of the province, and are open for business from nine o'clock in the morning until six o'clock in the afternoon. In addition to giving the convenience of longer hours, they also give a higher rate of interest than is the case of the chartered savings banks, namely a rate of $3\frac{1}{2}$ per cent interest. Limited checking privileges are extended.

The offices, of which there are seven, are well patronized and at April 30, 1930, there were 40,800 depositors and the deposits totalled \$14,350,000. In addition to two offices in Winnipeg there are offices at five other points in the province, namely at Brandon, Portage la Prairie, Stonewall, Carman and Ethelbert.

The assets of the Savings Offices, which are kept separately from any other accounts of the Government, consist of investments made in the highest grade government securities, with a limited amount in high grade municipals such as:—

Province of Manitoba exchequer bonds.....	\$ 6,209,000
Dominion of Canada bonds.....	71,000
Province of Manitoba and City of Winnipeg registered stock.....	3,813,000
Dominion Guaranteed Stock and Bonds.....	1,945,000
and	
Provincial Guaranteed Bonds.....	2,117,000

The balance sheet for these Savings Offices as at April 30, 1930, shows a free surplus, or rest account of \$471,697.83, which forms a strong reserve for the operation of the scheme.

In addition to the Provincial Savings Offices, a savings deposit service is maintained by the Federal Post Office Department through nearly all its principal postal offices.

PUBLIC FINANCE

The gross debt of the province as at April 30, 1930, was \$87,000,000.

Manitoba owns and operates two large utilities, namely a province wide telephone system representing a capital expenditure in excess of \$22,000,000, and an electrical power transmission system. The telephone system used in the city of

Winnipeg is wholly automatic and is second to none in the matter of up-to-date equipment and operation. The electrical power transmission system is for distribution of electrical energy to various parts of the province outside the city of Winnipeg. The city is served by its city-owned plant and also by that of a private company. The distribution of electrical power throughout the province was inaugurated in 1919 and was developed slowly until the last two years since when it has commenced to expand very rapidly. There has so far been expended on this distribution system the sum of approximately \$3,000,000 and further heavy expenditure is under way.

The program mapped out in recent years for the creation of good roads and main trunk highways has been closely followed, and each year sees the completion of new stretches of road while those previously constructed are maintained in good condition during the season. On this work there has been spent for new construction some \$16,000,000.

Public buildings of the province are of a high order and are well maintained.

The net debt upon which the annual charges are provided directly out of revenue is a total of \$42,975,000. The balance of the gross debt, \$44,725,000, represents that part raised for revenue bearing objects, telephones, drainage and other undertakings.

The credit rating of the province is very high as is proved by the rates received when its bonds for either new or refunding purposes are offered on the open market.

TAXATION

Manitoba, as is the case with other provinces, finds a lack of clear demarcation between Dominion and Provincial fields of taxation, especially so in the case of income tax, which is imposed by both. The Dominion Government imposes three direct taxes, namely, an Income tax, a Sales tax and a Stamp tax.

The Manitoba Government, speaking generally, leaves the taxation of real property to the Municipal Governments, namely, the cities, towns, villages and rural municipalities, but there are some government services which are partly paid for by a levy on real property, which is made by the Municipal

Commissioner upon all the municipalities in the province. These are:—(1) Child Welfare (Mothers' Allowance), one-half of which is borne by the general revenues and one-half of which is levied for as a property tax; (2) The Provincial Board of Health which formerly was distinct from the Government departments but which now works under and in co-operation with the Government Department of Health and continues, as before, to be supported by a property tax; and (3) Old Age Pension, three-quarters of the cost of which is borne by the general revenues of the province and one-quarter of which is levied for as a property tax.

Manitoba imposes a personal income tax and also imposes direct taxes upon corporations doing business in the province, taxing certain named corporations upon a basis deemed suited to them, and the remainder an income tax upon net profits. Also the province imposes a tax on the railway companies, the amount of which is arrived at periodically by agreement, based on gross earnings in the province. There is also the Public Amusements tax, which is a tax on the more expensive seats at places of amusement, and on the admission to horse races and the bets made over the pari-mutuels thereat.

The province also collects succession duties upon property of its residents or that is situate within its boundaries and, as is the case with all provinces, there is a charge for automobile licences, and a tax on gasoline which are deemed an offset to the cost of debt charges and maintenance costs for good roads.

CHAPTER IX

TRANSPORTATION AND COMMUNICATIONS

Manitoba has made rapid strides in the development of modern systems of transportation and communications. In 1870 the new province boasted of a steamboat service on the upper part of Red river which gave connection with United States towns to the south. Aside from that its means of transportation were very primitive. Canoes and York boats, Red River carts and dog sleighs were in common use. Means of communication were even less developed.

To-day the province has a network of steam railways, a number of electric railways, modern highways, up-to-date telegraph, telephone and wireless services, improved waterways, extensive mail service and progressive aerial mail and transportation lines. Further, it is witnessing the development of an ocean port and the establishment of shipping routes therefrom.

RAILWAYS

In 1871 British Columbia entered Confederation and the terms of the agreement under which it entered bound Canada to construct a transcontinental railway. Manitoba, lying directly on the path of the proposed undertaking, thus felt assured at an early date of railway connection with both the East and the West. Work was actually commenced by the Federal Government in 1874 but for some years the progress was slow. Meanwhile, in 1878, steel from St. Paul, Minnesota, reached St. Boniface and for a few years Manitoba's railway business was limited to this route.

The Canadian Pacific Railway. By the year 1880 the Federal Government had constructed about 700 miles of its transcontinental railway. It was then decided to turn over the proposition to a private syndicate. The terms called for the completion of the road within ten years. In return the syndicate was to receive free the sections already constructed, \$25,000,000 in cash, 25,000,000 acres of selected land in the "fertile belt," and other concessions. The Canadian Pacific

Railway Company, from this beginning, has developed into one of the greatest transportation systems in the world, operating also trans-oceanic, coastal and lake steamship lines and express and telegraphic services.

The railway was actually completed before the end of 1885 and the first through train from Montreal to Vancouver passed through Winnipeg in 1886. Since that date many branch lines were constructed in Manitoba. At the end of 1930 there were about 1,766 miles of Canadian Pacific railways in the province.

The Canadian National Railways. A second trans-continental railway had its inception in Manitoba in 1896 with



Hudson Bay Railway Bridge at Kettle Rapids, Nelson River

the building of a 125-mile section of the Canadian Northern railway. In 1902 the Canadian Northern completed its line from Port Arthur to Winnipeg and in the boom years that followed it extended its lines westward to Vancouver and eastward to Montreal.

A third transcontinental railway was built through Winnipeg and across Manitoba when the Federal Government constructed the eastern section of the National Transcontinental railway from Moncton to Winnipeg and the Grand Trunk Pacific Railway Company constructed the western section

from Winnipeg to Prince Rupert. The building of this road was undertaken in 1903. It was completed in 1915.

The Canadian Northern and the National Transcontinental railways now form parts of the Canadian National Railways, both having been taken over by the Federal Government as a result of financial difficulties.

The long-discussed Hudson Bay railway became a reality in 1930 with the completion of the line from The Pas to Churchill. Branch lines were built from it recently to the mining centres of Flin Flon and Sherridon. The main line is 511 miles in length. The Flin Flon branch is 88 miles and the Sherridon branch is 42 miles. These lines also constitute part of the Canadian National system which had, at the end of 1930, about 2,651 miles of lines in Manitoba.

Other Railways. The Greater Winnipeg Water District has 92 miles of railway parallelling its domestic water route from St. Boniface to Shoal lake. The Brandon, Saskatchewan and Hudson Bay railway, a branch of the Great Northern, has 85 miles of railway in Manitoba and the Midland Railway Company of Manitoba has a little over 6 miles, including freight terminals and yard facilities in the city of Winnipeg. The Great Northern, the Midland, the Northern Pacific and the Duluth, Winnipeg and Pacific railways have running rights over certain Canadian lines by which they are enabled to enter Winnipeg.

Electric Railways. Three cities in Manitoba—Winnipeg, St. Boniface and Brandon—have electric street railways. The total length of the Winnipeg and St. Boniface system, operated by the Winnipeg Electric Company, is 122 miles, of which 94 miles are within the city of Winnipeg limits. The Brandon system is municipally owned and comprises about 10 miles of track. The Winnipeg, Selkirk and Lake Winnipeg railway (electric) has about 43 miles of track. It operates between Winnipeg and Selkirk, and Winnipeg and Stonewall.

Mileage of Railways. At the end of 1930 the total mileage of steam railways in Manitoba was approximately 4,600. There were also about 175 miles of electric railways.

Services. The railways maintain telegraph and express services, and in every respect give the same quality of service

in Manitoba as elsewhere in Canada. The Canadian National Railways system operates the Fort Garry and the Prince Edward hotels in Winnipeg and Brandon, respectively, and the Canadian Pacific Railway Company operates the Royal Alexandra in Winnipeg. These hotels, as well as the railway passenger terminals at Winnipeg, rank with the best on the continent.

WATERWAYS

Manitoba's waterways do not occupy a very important place in her transportation systems. They are not, however, without an economic value, particularly in the development of districts yet without railway facilities. The difficult and intricate canoe routes used by early rival fur-trading companies and pioneers, leading from Hudson bay to the north end of lake Winnipeg, in one instance, and from lake Superior to the south end of lake Winnipeg in the other, are now used only by occasional travellers, trappers and Indians.

Red river, in the early days, was the main artery of commerce to Winnipeg, both from the north and from the south. Steamboats commenced to ply on Red river between Fort Garry and points south of the International boundary in 1862. Until the inauguration of a parallel railway service in 1878 this was the principal transportation system of the settlement.

Not Well Suited to Navigation. The navigation of the inland waterways of the prairie provinces is not an economic success. The open season is short, and the rivers of the plains are, as a rule, shallow, muddy, fairly swift in places and liable to sudden rising and falling. The great amount of soil carried in suspension, and the soft nature of much of the river bed results in a constantly shifting channel. In the more rocky sections the rivers are broken by many series of rapids and falls and can be navigated only by the aid of canals and locks.

Red River Navigation. The principal systems of inland navigation in Manitoba are those on Red river and lake Winnipeg and on the Saskatchewan river and adjacent waters. The headquarters of navigation on lake Winnipeg and Red river is at West Selkirk, some 24 miles north of Winnipeg. Between Winnipeg and Selkirk are found St. Andrew's rapids, to overcome which the Dominion Government constructed the St. Andrew's canal and lock at a point about 15 miles north of

Winnipeg. The canal was opened for traffic in 1910. The tonnage of freight passing through it has been from 30,000 to 70,000 a year. This freight consists mainly of forest and mineral products, which are brought up stream, the traffic down stream being very light. Canadian vessels only use this canal as shipping on the Red river south of Winnipeg has practically disappeared.

Lake Winnipeg. Lake Winnipeg is over 250 miles in length and nearly 300 miles from the head of navigation at Selkirk to Norway House at the northerly outlet. Fleets of steamboats, tugs, sail boats and other craft employed in the fishing industry ply up and down these waters during the open season.

In addition to the fisheries, lake Winnipeg has great quantities of timber and pulpwood along its shores. The route to the Central Manitoba gold fields also leads from Selkirk across the lower end of lake Winnipeg to the mouth of Manigotagan river. This lake has about 1,000 miles of shore line, and, save for a few points at the southern end served by railways, the only means of transportation is that afforded by water traffic.

Saskatchewan River. The Saskatchewan waterway extends from The Pas, as headquarters, down stream to Cedar lake, and up stream to Cumberland lake. Below The Pas, the Saskatchewan river is wide and sluggish, and it breaks up into numerous intricate channels winding through a low-lying, flat country. Smaller boats are able to connect with Moose lake, where there is a small settlement. Cedar lake is an expansion of the Saskatchewan and lies immediately north of lake Winnipegosis. At the entrance to the lake is situated the old Hudson's Bay Company's post, Chemahawin, and a couple of short portages lead from the south shore of the lake to the north shore of lake Winnipegosis. Between Cedar lake and lake Winnipeg the Saskatchewan river once more contracts and flows through a rocky gorge. There is considerable fall between these lakes giving rise to the famous Grand rapids of the Saskatchewan, which act as a barrier to navigation. In early days a tram line was operated around them.

Following the discovery of minerals in the district north of The Pas a steamboat service was inaugurated by following the Saskatchewan river from The Pas to Cumberland lake and

thence crossing Cumberland and Namew lakes. This section of the Saskatchewan is very crooked but can be successfully navigated during the summer season. With railway service to Flin Flon there is now but little demand for this steamboat service.

Other Travelled Routes. Boats engaged in the lumber business ply from The Pas up Carrot river for some distance, and great quantities of logs are rafted down to be sawn at The Pas.

A number of small boats also ply on lake Manitoba and on lake Winnipegosis. A number of settlers on the shores of these lakes are largely dependent on the summer boat service for transportation of their supplies and products.

Prospectors entering the Central Manitoba field ascend the Manigotagan or Wanipigow rivers, which flow into lake Winnipeg near its southeasterly extremity. In the mining district north of The Pas a chain of lakes and rivers constitutes a much-used route from west to east. The best known Manitoba lakes on this route are Athapapuskow, with Schist, and Flin Flon lakes to the northwest and Amisk or Beaver lake just west of the Manitoba-Saskatchewan boundary line, Cranberry lakes (three in number), Sandy lake, Elbow lake, Island lake, Reed lake and Wekusko or Herb lake. Still further easterly, Grassy river may be followed to join the Nelson at its expansion, Split lake. From Split lake, Burntwood river may be ascended to Nelson House.

An Old Trade Route. The old trade route between Norway House and York Factory is still used to some extent. Leaving Nelson river a short distance below Norway House, a chain of lakes leads to the headwaters of Hayes river. Lakes and connecting streams give access in this region to Oxford House, Gods lake and Island lake, where a certain amount of trapping and prospecting is being carried on. The Hayes River route reaches Hudson bay at York Factory.

An alternative route is that following Nelson river. After leaving Norway House, this route passes a small settlement at Cross lake. It intersects the Hudson Bay railway at Manitou rapids and again below Split lake at Kettle rapids. The Long Spruce and the Limestone rapids are found below Kettle rapids. Shallow draft boats are able to operate on the Nelson from the

foot of Limestone rapids to the mouth of the river, a distance of about 60 miles.

Churchill River. Still further north is the great Churchill river, giving a canoe route across the northern parts of Manitoba and Saskatchewan and connecting by the famous Methy portage with the waterways of the great Mackenzie basin. These waterways are used by few except Indians and trappers. An expansion of the Churchill in Manitoba forms the great



Entrance to Churchill Harbour

Southern Indian lake and at the mouth of the river is found the natural harbour of Churchill. From Churchill river, Reindeer lake is reached, and on its north shore is found the trading post of Du Brochet. In fact the canoe is the only means of travel throughout Manitoba's great Laurentian regions during the summer time within reach of the natives and by it practically every nook and corner may be visited.

HIGHWAYS

Manitoba's rectangular system of land survey accounts for a network of highways running north and south and east and west at regular intervals. The principal exception to this general rule is found in the territory adjacent to Red river and the lower part of the Assiniboine. Here the early Selkirk settlers had arrived before the surveyor, and choosing their land front-

ing on these rivers they travelled back and forth by the most convenient routes, thus making trails through their holdings which later became established roads.

Road Allowances. In subdividing Crown Lands and throwing them open for homestead, the Dominion Government set apart regular road allowances, but left to the Provincial Government the task of making the actual road. In certain instances the theoretic road allowance fell in impossible places, making road diversions necessary. In other instances the building of a bridge, the grading of a hill or the draining of a slough was all that was required to make such road allowances passable. Again, hundreds of miles of road allowances, laid off on the prairies with mechanical regularity, have been followed without a single attempt at road making.

Provision is made for road allowances running north and south at one mile intervals, and running east and west at one mile intervals in the first system and two mile intervals in the third system of survey. As a township, in either case, is practically six miles square, consisting of 36 sections each one mile square, it will be seen that in the first system of survey it will contain 72 miles of road allowances, counting half the exterior mileage. In like manner a township of the third system will contain 54 miles. Road allowances under the first system of survey are one and one-half chains in width (99 feet). Under the third system they are one chain (66 feet) wide. The area of land included in road allowances in the surveyed tract is over 977,000 acres. The building of permanent trunk systems has become a matter of vital importance. Owing to the absence of stone or gravel from great areas of Manitoba's wheat lands the cost of such permanent construction is greatly increased by the necessity of securing material from distant sources.

The Good Roads Movement. The Legislature of 1914 enacted an Act, cited as "The Good Roads Act, 1914" for the primary purpose of assisting and encouraging rural municipalities in the development and improvement of a system of market roads and highways. This Act is still in force and many municipalities have widely availed themselves of its provisions in securing the advantages of better roads.

To administer the Act, a Good Roads Board consisting of three members, of which the Highway Commissioner is chair-

man, was established. The duties of such Board require the close investigation of and final decision respecting applications for improvement of roads, together with supervision of ensuing work when so approved.

The Act provides Government assistance to the extent of 66 $\frac{2}{3}$ per cent on Provincial aided highways, 50 per cent on gravel market roads, 33 $\frac{1}{3}$ per cent on earth market roads, and 50 per cent on permanent bridges and structures.

Pursuant to the Act, the amount of work performed thereunder from its inception in 1914 to the end of the Fiscal Year, April 30, 1930, is shown in the following statement:—

TABLE III.—ROADS AND BRIDGES CONSTRUCTED UNDER
"THE GOOD ROADS ACT, 1914"

Mileage of roads authorized under Act, exclusive of Provincial Trunk Highway mileage.....	4,300
Mileage of pavements constructed.....	32
Mileage of Provincial aided highways improved....	175
Mileage of market roads graded only.....	1,650
Mileage of market roads graded and gravelled.....	1,836
Number of bridges constructed, exclusive of those on Provincial Trunk Highways.....	1,471
Amount paid by Government to Municipalities for roads.....	\$ 6,663,609 13
Amount paid by Government to Municipalities for bridges.....	942,686 09
Total.....	<u>\$ 7,606,295 22</u>
Amount expended by Municipalities on roads.....	\$13,244,192 95
Amount expended by Municipalities on bridges.....	1,944,911 19
Total.....	<u>\$15,189,104 14</u>

Provincial Trunk Highways. Having in view the rapidly increasing automobile traffic, both International and Interprovincial, the Legislative Assembly at its session in 1925 amended "The Good Roads Act, 1914," by authorizing the Provincial Government to take over, construct, maintain and assume complete control of a system of arterial highways, designated "Provincial Trunk Highways," heretofore under the control of the municipalities through which they pass.

This system of Trunk Highways comprises an approximate mileage of 1,600 miles—radiating in all directions from the city of Winnipeg and connecting with similar avenues of traffic in Ontario on the east, Saskatchewan on the west and the United States to the south. Five main Trunk lines from east to west more or less parallel, and other north and south routes connecting therewith, serve all settled portions of the province.



Highway Scene in Manitoba

Construction of this system of Trunk Highways is well advanced, enabling traffic to operate under all conditions of weather.

TELEPHONE SYSTEM

Telephone service in Manitoba dates back to the year 1880, at which time a private exchange was established in Winnipeg. The Bell Telephone Company of Canada purchased this system a couple of years later and established exchanges in Brandon and Portage la Prairie. For over 25 years this company provided Manitoba with its telephone service.

In 1907 the Manitoba Government entered into negotiations with the Bell Telephone Company and in January, 1908, took over the entire Manitoba system. At this time there were 8,792 telephones in use in Winnipeg and 5,219 telephones in use throughout the balance of the province.

A Government System. Under Government ownership telephone service in Manitoba has progressed, expanded and developed. Its facilities have been extended to the smallest and remotest towns in the province, not with regard to cost or with an idea of profit, but for the purposes of serving the people.

Development of the Manitoba telephone system during the past few years has been on a large scale and at present the service extends to practically all the settled towns in the province. In the rapid development which has taken place, every precaution has been taken to use only the best material and up-to-date construction methods, with the result that to-day the people of Manitoba have a telephone system second to none. The lines and equipment of the service are built standard in every particular and it is the aim of the management to keep it at as high a state of efficiency as possible.

Manitoba has about 70,000 telephones in use and of these a great majority are direct subscribers to the Government system—the balance being connected with municipal systems or private companies. These private systems, however, have direct connections with the Government long distance lines and therefore enjoy, with the Government subscribers, all the benefits which accompany connection with the provincial system.

Long distance lines of the system have been extended to all the inhabited districts in the province, as well as making direct connection with points in Alberta, Saskatchewan, North Dakota, Minnesota, Western Ontario, South Dakota, and elsewhere. The long distance lines are constructed of sufficiently large copper wire to permit of commercial long distance service to Montreal and Toronto, and to all points in the United States.

Operates Radio Station. A new branch of the system was introduced in 1923 in the form of a powerful Radio Station, CKY, Winnipeg. It is the only large radio station owned and operated by any telephone system on the North American continent. Programs of entertainment, information and instruction are broadcast from it by the telephone system and other organizations to thousands of listeners in all parts of Manitoba and adjacent areas. A smaller station at Brandon was added to the system at a later date, and is operated mainly for the broadcasting of market reports of interest to the agricultural parts of the province.

MAIL, TELEGRAPH AND WIRELESS SERVICES

Mail Service. The mail service of Canada is maintained by the Post Office Department of the Dominion Government at Ottawa. Manitoba, therefore, shares all the advantages of a national postal service with world-wide connection. The expansion of the mail service has kept pace with the rapid growth of the province and has been maintained in a high state of efficiency.

On March 31, 1930, there were in operation in Manitoba 815 post offices. The gross postal revenue for the year ending on that date was \$4,484,987.77. The number of money-order offices in the province is about 400. Greater Winnipeg and Brandon have street deliveries and collections.



Highway Bridge, Souris River, near Carrol

Rural Free Delivery. A free rural mail system has been inaugurated in Manitoba and there were 124 rural routes in operation in 1930. With the development of the province and the further building of good roads, these rural routes are being extended.

Air Mail Service. On March 3, 1930, a daily air mail service was inaugurated between Winnipeg and Calgary, via Moose Jaw, Regina and Medicine Hat, with a northern link to Saskatoon, North Battleford and Edmonton. The Post Office

Department reports that this service expedites the trans-continental movement of mails by a full twenty-four hours, as well as giving fast inter-city communication to the principal centres in the prairie provinces.

P.O. Savings Bank. The Post Office Savings Banks are a great boon to residents of Manitoba, especially in outlying sections. Every post office that is authorized to transact a money-order business is also authorized to act for the Central Savings Bank in the Post Office Department at Ottawa. An account may be opened by a deposit of one dollar, and interest is allowed on all amounts up to five thousand dollars. Canadian Government annuities also may be purchased through the postmaster. Full information regarding such matters, as well as purely postal affairs are to be obtained at any post office in the province.

The cities and towns of Manitoba enjoy an efficient postal service but no class of people appreciate the benefits of the system more than those living on farms where rural delivery has been established. The rural mail route, the rural telephone and the radio have removed one of the greatest objections to farm life—its isolation. The daily delivery of letters and papers is a most pleasurable event and the many varied services rendered by the parcel post system are of inestimable value. The extension of the rural service is one of the greatest factors in encouraging land settlement.

Telegraph Service. The Canadian telegraph systems include lines owned and operated by the Dominion Government and lines owned and operated by railway and telegraph chartered companies. In Manitoba a widespread service is provided by the Canadian National and the Canadian Pacific railways.

Wireless Service. In addition to the radio stations operated by the Manitoba Telephone System, there are a number of wireless stations in the province operated by the Dominion Government in connection with departmental activities which give also a commercial service to the people living near by. The Royal Canadian Signals, Department of National Defence, operates stations primarily in connection with aviation activities at Winnipeg, Lac du Bonnett, Bernes River, Norway

House, Thicket Portage, Cormorant Lake and Winnipegosis in Manitoba and at Pelican Narrows in Saskatchewan near the Manitoba boundary. A Radio Beacon station is operated also at Forrest. The Department of Marine operates a station at Churchill as an aid to navigation. The commercial service rendered by these stations is a great boon to the people who live or have interests in the several outlying districts where they are located.

The Manitoba Telephone System has made use of wireless stations also in extending its service from The Pas to Flin Flon.

AVIATION

Aviation. Aerial navigation has made rapid strides in Manitoba in recent years. The Royal Canadian Air Force maintains a unit at Winnipeg which, on March 31, 1930, had a strength of 22 officers, 111 airmen and 37 aircraft. This force has done a great amount of work in connection with forest fire prevention patrols, photography for map making and the carrying of personnel engaged on various governmental undertakings.

Over twenty commercial companies are reported operating in the three prairie provinces. The carrying of mails constitutes an important part of their business. A great deal of flying has been done also in the transporting of men and supplies to and from the various mining regions of Manitoba and adjacent fields. Passenger travel by air between the principal centres of the prairie provinces is becoming quite popular.

Flying Clubs have been organized at Winnipeg and at Brandon. In the future development of world air routes, Winnipeg hopes, by reason of its strategic location, to play an important part.



CHAPTER X

EDUCATION AND PUBLIC WELFARE

In its educational facilities and religious liberty Manitoba enjoys an enviable position. From its system of free and compulsory elementary schools to its modern university it offers wide and varied opportunities for the acquisition of knowledge. There are no state churches in the province and many religious denominations are represented.

EDUCATION

Early Institutions. Before Manitoba became a province in 1870 education was in charge of the religious bodies. Schools for the English speaking population were established as early as 1820. St. John's College, after an existence of nearly half a century, was incorporated in 1871. The Scottish settlers organized a school in 1849, which also was incorporated in 1871 as Manitoba College. French missionaries were early on the ground. In 1818 Father (later Bishop) Provencher opened a school on land granted by Lord Selkirk, which, in 1823, was established as St. Boniface College. Wesley College, established under the auspices of the Methodist Church, was incorporated in 1877, and Brandon College, a Baptist institution, was organized in 1899.

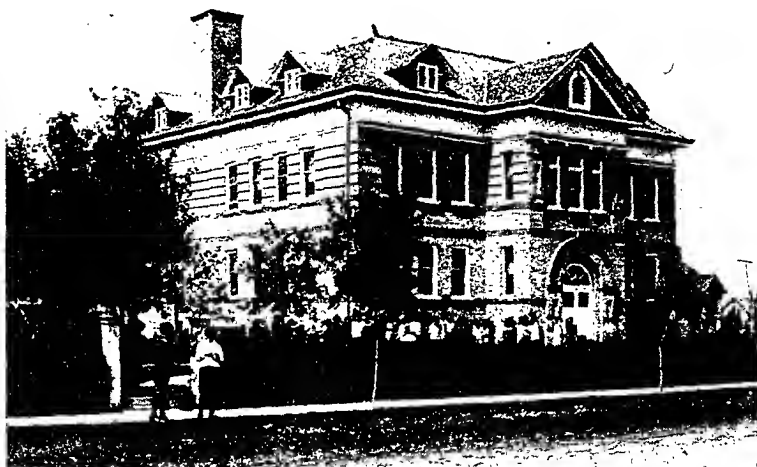
Under the terms of the British North America Act, each province of the Confederation constituting the Dominion of Canada is given control of its own educational affairs. Manitoba promptly took up this task and in 1871 passed an Educational Act providing for a system of schools for the province. An educational board was constituted which was to consist of two sections, Protestant and Roman Catholic. Twenty-four school districts were defined and school affairs continued to be administered as before, by the respective church officials.

Free Non-sectarian Public Schools. In 1890 Manitoba passed the Public School Act. This Act provided that the public schools should be free and non-sectarian. It vested in an

Advisory Board all matters relating to the program of studies to be followed.

Many difficulties were encountered in establishing the public schools throughout the province. Foreign-born settlers, not speaking the English language, had to become acquainted with the system, and the lack of teachers had to be overcome by establishing special training schools. Further remedial legislation was passed in 1913 and in 1916, and to-day the law ensures the compulsory attendance of children of school age, the use of the English language exclusively and of standard text books in English.

Recent reports of the Department of Education record an enrolment of over 150,000 pupils of whom over 135,000 are



Public School at Virden

enrolled in elementary grades. The number of school districts formed to date exceeds 2,200. Over 2,000 school buildings have been erected in the province and over 4,000 school departments are in operation.

Secondary Schools. The growth of secondary schools in Manitoba is noteworthy. In 1885 there were two high schools with four teachers. To-day every city, town and village pro-

vides a fair measure of secondary education. The secondary schools of Manitoba, as on June 30, 1929, included 123 intermediate schools, 45 high schools, 9 collegiate departments, 19 collegiate institutes and 10 junior high schools.

Normal schools for the training of teachers are located at Winnipeg, Brandon, Dauphin and Manitou. The amount of money paid annually in teachers' salaries in the public and secondary schools of Manitoba now exceeds \$5,000,000. The annual disbursements by school districts for all purposes exceeds \$10,000,000.

Technical Education. The Winnipeg School Board provides instruction in manual training or industrial arts, home-making and commercial work. In a recent year nearly 10,000 students were enrolled in each of the industrial arts and home-making courses and over 2,300 in the commercial course. Home study courses are provided also, subjects proving most popular being steam engineering, electricity, auto operation and repair, commercial art, drafting and design, civil engineering, architecture, business management and dressmaking. Brandon has made a beginning in technical education by opening a school of motor mechanics. Expansion of the work is under way.

Other Work. The Department of Education operates also an Industrial Training School at Portage la Prairie and the Manitoba School for the Deaf at Winnipeg. A number of blind pupils were sent, at the expense of the province, to schools for the blind in Ontario and in Quebec.

Provision is made for instruction in temperance, for the operation of Boys' and Girls' Clubs, for field days, orational contests, physical education and other modern associated activities of public education. School and travelling libraries, free text books, educational motion pictures, radio broadcasting, correspondence courses and other up-to-date aids to education have been introduced.

School Buildings. Manitoba's public school buildings are a credit to the province. In general terms they may be said to be substantial, attractive and modern. Some of the larger city and town structures rank with the best on the continent, while the small country school-house, flying the Union Jack and surrounded by an attractive yard, proclaims the important part it is playing in the life of the community.

Indian Education. The Federal Government is responsible for the education of the youth of the Indian people. Several churches are actively interested and are associated with the Department of Indian Affairs in the maintenance of 44 day and 10 residential schools for Indian children in the province. At the boarding schools, vocational training is provided in addition to the regular class-room activity. In the fiscal year 1929-30, 1,320 and 978 pupils were enrolled in the day and residential schools, respectively. Indian children who show academic promise are given tuition grants to enable them to secure secondary education; other successful graduates of Indian schools are given assistance to establish themselves on the reserves, and their activity is supervised by field workers.

UNIVERSITY OF MANITOBA

The University of Manitoba was established by Act of the Manitoba Legislature in 1877 "for the purpose of raising the standard of higher education in the province and of enabling all denominations and classes to obtain academic degrees." The four colleges already existing were affiliated with it the same year, namely, St. John's, St. Boniface, Manitoba and Wesley. For a number of years the actual giving of instruction was left to the colleges and the university confined its activities to the holding of examinations and the conferring of degrees.

An endowment of 150,000 acres of land was made by the Dominion Government in 1885. In 1899 the construction of a building on Broadway Avenue was commenced and in 1900 three lecturers in Natural Science were engaged. In 1904 six chairs were established in Physics, Botany, Chemistry, Physiology, Mathematics, and Bacteriology. A Department of Civil Engineering was created in 1907 and one in Electrical Engineering in 1909. Work in Political Economy, English and History was added also in 1909 and Departments of Agriculture, French and German were created in 1913. Pharmacy, Mechanical Engineering and Classics were added in 1914 and during the year 1914-15 there was, for the first time, a body of students registered for instruction at the University only and not associated with any college.

During the years of the Great War the attendance was very limited. Since that time it increased rapidly and the

Broadway Avenue buildings were soon outgrown. In 1924 the administration of the Manitoba Agricultural College, which had been affiliated with the University in 1907, granted degree-conferring powers in 1912, and re-affiliated in 1916, was transferred to the Board of Governors of the University. The Manitoba Law School was established in 1914, under the joint auspices of the University and the Manitoba Law Society.



Manitoba Agricultural College

Faculties now include Arts, Science, Law, Medicine, Engineering, Architecture, Pharmacy, Agriculture, Household Science, and Education. A course leading to the degree of M.A. in Education is a recent establishment. The teaching staff numbers about 300 and the total student registration about 4,000.

Settlement of New Site Question. The Committee of the Legislature appointed in April, 1929, for consideration of the matter of a permanent site for the University reported on November 28, 1929, recommending that the new University buildings be built at the Agricultural College site and that this site be used for instruction in the senior years in Arts and Science and that instruction in the junior years be continued in the buildings on the present Broadway Avenue site. This report was adopted by the Legislature and \$1,000,000 was

voted for the erection of new buildings. Construction work has begun and it is expected that in the fall of 1931 instruction in the Senior Division in Arts and Science and in Engineering and Architecture will be transferred to the new site.

RELIGION

Religious denominations are widely represented and freedom of worship has permitted all creeds to thrive. No late statistics regarding the numerical strength of the various religious denominations in Manitoba are available, but according to the census of 1921 the Presbyterians headed the list with a majority of about 17,000 over the Anglicans who were second. The Roman Catholics took third place with the Methodists fourth, the Greek church fifth and the Lutherans sixth. These constituted over five-sixths of the entire population. Of the remainder, the Mennonites, Jews and Baptists led in the order named. There were 16 denominations each having over 1,000 adherents and several more with smaller representation.

With the organization in 1925 of the United Church of Canada, brought about by the union of the Congregationalists, the Methodists and a majority of the Presbyterians, the classification of 1921 became out of date. It serves to illustrate, however, in a general way, the religious tendencies of Manitoba's cosmopolitan population.

In the principal cities and towns of the province some very fine edifices are to be seen while throughout the rural districts the number and excellence of the church buildings is a pleasant surprise to the traveller.

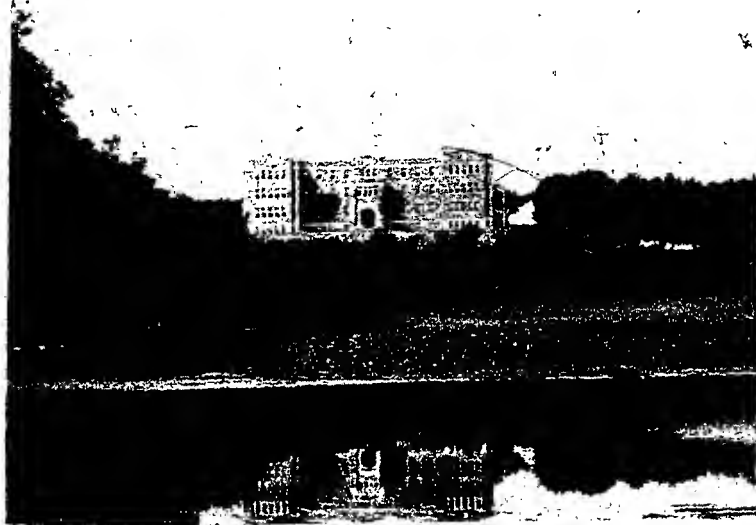
PUBLIC WELFARE

In no part of Canada is the welfare of the people receiving greater attention than in Manitoba. The Provincial Department of Health and Public Welfare administers the following acts which have been placed on the statute books as welfare measures:—The Child Welfare Act, The Home for the Aged and Infirm Act, The Hospital Aid Act, The Manitoba Sanatorium Act, The Marriage Act, The Mental Diseases Act, The Municipal Hospitals Act, The Public Health Act, The Venereal Diseases Act, and The Vital Statistics Act. Over two million dollars annually are spent in the administration of

these acts. The Old Age Pension Act came into force on September 1, 1928.

The Department operates the Brandon Hospital for Mental Diseases, the Selkirk Hospital for Mental Diseases, the Home for Aged and Infirm, Portage la Prairie, and the Old Folks' Home, St. Boniface, and the Psychopathic Hospital, Winnipeg. It exercises fiscal supervision of public institutions and relief and carries on an active campaign for the betterment of health conditions, particularly along educational and preventative lines.

Public Health nurses play an important part in Manitoba's welfare services, particularly in their work among school children. There are about 35 nurses on the staff of the Department of Health and Public Welfare and their work in the schools is carried on in co-operation with the Department of Education. It embraces health inspection and health training through various forms of activity and the work is extended from the school to the community by home visits made for the purpose of giving health instruction and demonstrations. A certain amount of public service nursing is provided as part of the general service.



Indian Residential School, Brandon

Child Welfare Work. The direction of Child Welfare work in Manitoba has the good fortune to be well co-ordinated under one single Act. By the Child Welfare Act of 1924 and subsequent amendments, provision is made for the definition of the various duties of the Director of Child Welfare, who acts in that capacity as a Superintendent of Neglected Children as well as a Children's Aid Society.

Provisions are made also for the constitution of a Juvenile Court, for the enrolment and care of bereaved and dependent children, for the care of children of unmarried parents, for the study, training, care and supervision of mentally defective or physically handicapped children, for the supervision of immigrant children, for the adoption or guardianship of children who are either totally bereaved or deserted, and for the organization of Child Welfare Committees and Children's Aid Societies throughout the province.

Working in co-operation with the Child Welfare Division of the Department of Health and Public Welfare, is a Child Welfare Board which is appointed by the Lieutenant-Governor-in-Council. The Child Welfare Division is associated with five Children's Aid Societies in the province. These Societies are incorporated under charter from the Provincial Government, which gives an annual grant to each. They are distributed with reference to unified geographical area, one Society being at Dauphin for the northern part of the province, another at Brandon for the western part of the province, the Children's Aid Society at Winnipeg operating in Greater Winnipeg, the Children's Aid Society of St. Adalard operating for Roman Catholic children in the southern and eastern part, and the Jewish Children's Aid Society operating throughout the province for Jewish children exclusively.

At the present time there is a Child Welfare Committee in almost every municipality. These Societies co-operate with the Division and with the Welfare Board especially in the work of investigating the conditions of applicants for Mothers' Allowance.

As an indication of the extent of this work within the Province of Manitoba, it may be mentioned that during a recent year the sum of about \$632,000 was expended in Mothers' Allowances and the sum of over \$531,000 in allowances to bereaved and dependent children. Such an expenditure in one

particular field of the beneficent activity speaks well of a province with less than three-quarters of a million people.

Hospitals and Social Service. Manitoba is well to the fore with a long list of modern hospitals widely distributed. The training of nurses and social service workers receives particular attention. In 1913 "The Manitoba Association of Graduate Nurses" was created by an Act of the Legislature. Examinations of candidates who have completed courses of training with a view to admission into this Association are held annually by the University of Manitoba. Instruction in social service is provided also by the University.

The public welfare activities of the Government and of the several municipalities are augmented by those of a wide range of other organizations, including churches, fraternal and beneficent societies, women's societies, welfare departments of large industrial and commercial institutions, and labour organizations.

SPORTS AND RECREATIONS

Realizing the important bearing that wholesome sport and recreation, especially the outdoor varieties, have upon the general welfare of the people, Manitoba has seen to it that ample provision is made for a wide range of activities in these connections by all classes. Public parks and playgrounds are liberally provided in all urban centres. Municipal golf links have been in operation for years. Highways have been improved to make motoring possible in all stages of weather. Hunting and fishing privileges are being cared for with a view to permanency. Legitimate sports are encouraged and progressive measures are being adopted to expand this phase of public welfare.

CHAPTER XI

NATIONAL PARK AND RECREATIONAL ATTRACTIONS

RIDING MOUNTAIN NATIONAL PARK

Manitoba is fortunate in having within its boundaries one of the great National Parks of Canada. On January 28, 1930, the Riding Mountain National Park was established by the Federal Government and set aside as a playground for the use and enjoyment of the people and as a game sanctuary for wild life for all time. Its official opening was timed for the summer of 1931.

The area comprising the park is that area which had been set aside at an earlier date as the Riding Mountain Forest Reserve. The other forest reserves in Manitoba passed, with the general transfer of natural resources, from Federal to Provincial control later in the same year but by the conversion of the Riding Mountain Forest Reserve to a National Park the Federal Government assumed the responsibility for its permanent upkeep.

Large Park Area. The area of this new park, the latest addition to Canada's chain of great National Parks, is 1,148 square miles. It is located in the west-central part of the most thickly settled portion of Manitoba, within easy reach of the great majority of the urban and rural residents of the province and convenient of access by non-residents. At the same time it is located on the high and heavily timbered summit of the Manitoba escarpment, on land that is not suitable for agricultural occupation and in a setting that, in sharp contrast to the surrounding prairies, is ideal from scenic and recreational viewpoints.

The general elevation of the park is 2,200 feet above sea level with a maximum elevation of 2,500 feet. It is about 1,500 feet above the surrounding country. The eastern side of the escarpment is fairly abrupt but there is a gradual slope towards the southwest. Glacial moraines and boulders abound on the

higher elevations. While the area is referred to as a mountainous one it is but mildly rugged and all parts are comparatively easy of access.

Varied Flora and Fauna. The park contains a large variety of trees. In addition to a prolific coniferous growth there are several eastern species of broad leaf trees such as bur oak, elm, maple and ash. Altogether there are some twelve species of commercial trees and several non-commercial species including mountain ash, wild plum and others. Shrubs and wild flowers are found in abundance, the flowers, of which there are many varieties, being particularly numerous in the open glades of the forest.

Wild life is plentiful in the park. One of the largest known herds of elk roaming in a free state is found in it. No accurate estimate of the size of this herd has been made as yet, but it is believed to number two or three thousand head. Numbers up to three and four hundred are frequently seen feeding in the early morning on the Lake Audy plains, across which the north and south trail through the park passes.

Moose, Virginia and cotton-tail deer, bears, beavers and several other species of fur-bearing animals, as well as a wide range of game and song birds are numerous also. As yet the wild life of the park is timid and difficult of approach. In time both beasts and birds will learn that they are safe within the boundaries of the park and then, doubtless, they will become as fearless of visitors as are their fellow creatures in the older parks.

Beautiful Lakes. The park contains a number of beautiful mountain, spring-fed lakes of various sizes. The largest and finest is Clear lake which is situated just within the south boundary. It is approximately nine miles in length and varies in width from a mile to two and a half miles. The emerald colouring of its waters is unique. Many visitors have compared it to the colouring of lake Louise in the Banff National Park. Its shades of colour vary from hour to hour and from day to day and are particularly beautiful at sunrise and at sunset.

Clear lake has some very fine beaches and a well defined, high shore line embellished by numerous picturesque jutting points and a background of spruce, balsam, fir and deciduous trees. The views from some of the points are particularly pleas-

ing and have won praise already from artists and photographers. Excellent bathing and boating are available in this and numerous other lakes in the park.

Park Townsite and Camping Grounds. At Clear lake is located the park townsite where there are already a number of summer cottages, a hotel, a store and an automobile service station. Arrangements are under way for the construction of many additional places of business so that every need of the visiting public can be supplied. During the summer season the office of the Park Superintendent is open for the convenience of visitors. Mail and telephone services are provided.



Scene in Riding Mountain National Park

No fee is charged motorists entering the park but registration for record purposes is required.

There is a very excellent motor camp site on the shore of Clear lake. Modern conveniences are supplied, including shelters equipped with stoves, tables and benches. The water supply is drawn from spring-fed wells constructed to prevent contamination. A large, well-drained and beautifully timbered area is included in the camp site.

Camping permits are issued at the rate of one dollar per month per tent.

Recreational Attractions. Provision has been made for golf, tennis, swimming, bathing, boating, riding and hiking, and a children's playground is a special feature.

One of the finest nine-hole golf courses on the continent is being constructed and will be operated by the Government. It is located in a beautiful natural setting at the east end of Clear lake. A moderate fee will be charged.

The Government is providing also two tennis courts which will be for the use of the public without charge.

The main sandy beach on the south side of Clear lake in the vicinity of the commercial section of the townsite provides excellent bathing facilities for the experienced swimmer as well as safe bathing for children. A Government bath house is at the disposal of visitors without charge at this beach. Many other beaches are suitable for bathing.

Row boats may be hired from a private enterprise and a launch is in daily operation. It makes one hour trips on a definite schedule from the Government pier.

For the rider and the hiker there are many routes which may be followed to interesting points in the vicinity of Clear lake.

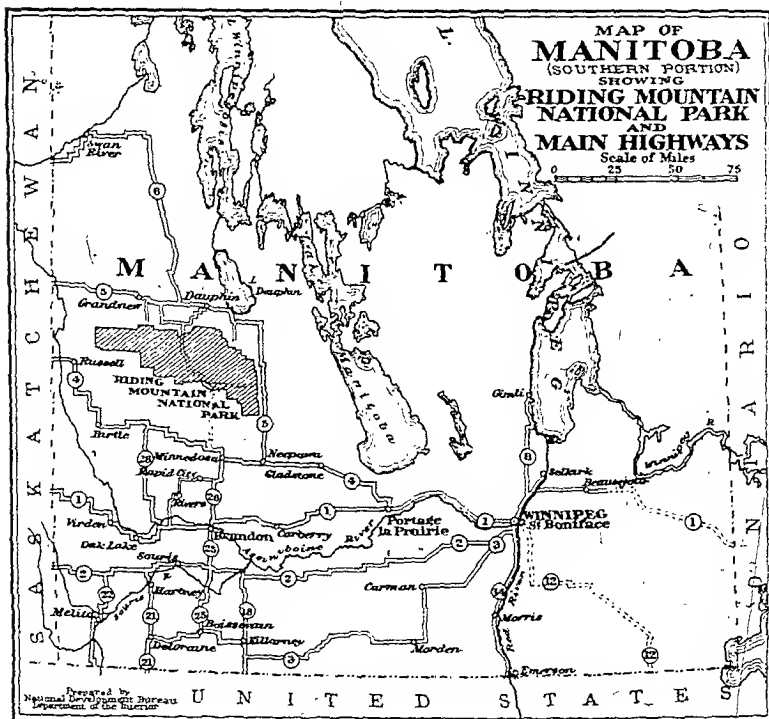
A suitably equipped playground for children is being provided on a site adjoining the public picnic ground on the main beach of Clear lake and close to the motor camp site.

Accessibility. Clear lake and the present accessible portions of the park are reached by roads now under construction or improvement which lead off from some of the main trunk highways of the province. Neepawa, which is served by both the Canadian National and Canadian Pacific railways as well as by Provincial highways Nos. 4 and 5, will doubtless be the principal centre from which motor trips into the park will be made.

From it, cars may follow Highway No. 5 north as far as Northgate, from where a new highway is being built directly west to Clear lake. Or Highway No. 4 may be followed west from Neepawa to Minnedosa, from where a road leads north and northwesterly to the same lake. From the north, the park may be reached by a road running southerly from Dauphin to Clear

lake. The route from Neepawa to Clear lake by way of Northgate is about 55 miles in length.

The Riding Mountain National Park, though as yet in the early stages of development, promises to be very popular. It is a valuable asset to the province and will doubtless become a favourite holiday resort of large numbers of its residents as well as of visitors from beyond Manitoba.



MOTOR HIGHWAYS

Motoring in Manitoba has received a great impetus during the last few years by the construction of a network of all-weather highways throughout the more thickly populated parts of the province. These highways, with few exceptions, are not paved, but are surfaced with a wide, deep coating of good, clean gravel, which is kept in excellent surface condition by the liberal use of graders.

The highways are constructed with easy grades and curves. The driving surface is wide. Bridges and culverts blend smoothly into the roadway, embankments are protected with railings and wire netting, and all highways are prominently posted with number and danger signs.

Motoring on Manitoba's highways is safe and enjoyable in all kinds of weather, except during part of the winter, and even then some of the main roads are kept open. Accommodation for motorists is amply provided by up-to-date hotels, private houses, camps and service stations at every centre. Most of the tourist camps are free and others have very moderate fees.

Numbered Highways. Following is a very brief outline of the main motor highways of Manitoba. For further information, maps and booklets, the prospective visitor should write to "The Tourist and Convention Bureau of Winnipeg and Manitoba, Winnipeg, Manitoba."

Highway No. 1 is an all-weather link of the Trans-Canada highway running through southern Manitoba from the Ontario border to the Saskatchewan border. The eastern part of it is still under construction. The principal centres on it are, from east to west, Beausejour, Winnipeg, Portage la Prairie and Brandon. On this highway one sees the heart of industrial and agricultural Manitoba.

Highway No. 2 runs south of and paralleling Highway No. 1 from Winnipeg to the Saskatchewan border. It passes through the following principal centres:—Elm Creek, Holland, Cypress River, Glenboro, Wawanessa, Souris and Pipestone. This highway passes through a diversified farming country, of a flat nature near Winnipeg but gradually merging into rolling country generously dotted with poplar bluffs.

Highway No. 3 is still farther south than No. 2, running from Winnipeg to Deloraine by way of Carman, Morden, La Riviere, Pilot Mound and Killarney. It passes through one of the earliest developed parts of the province, now a fine mixed farming country, and has many picturesque spots on its route. The Pembina valley, the Turtle mountains, the Lake Killarney summer resort and the Morden fruit district are particularly interesting areas.

Highway No. 4 runs north of and paralleling No. 1 from Portage la Prairie to the Saskatchewan border. It passes through a rolling and scenic part of Manitoba's agricultural belt. The principal centres on it are Gladstone, Neepawa, Minnedosa and Birtle. The scenic attractions of the Bird Tail valley, through which this route runs, are particularly pleasing.



Clear Lake, Riding Mountain National Park

Highway No. 5 branches off No. 4 at Neepawa and runs north, skirting the easterly foot of the Riding mountains to the foot of lake Dauphin. It then turns west and runs through Dauphin, Gilbert Plains, Grandview and Roblin to the Saskatchewan border, traversing a rich agricultural belt lying between the Riding and the Duck mountains. The scenery along this route is very fine.

Highway No. 6 branches off No. 5 at Dauphin and runs north to Swan River, skirting the eastern slope of the Duck mountains. This is the farthest north motor road in Manitoba. Its extension to The Pas is a future possibility. The country through which it passes is mostly wooded and very scenic, but the roadway is, as yet, not quite all gravelled.

Highway No. 8 runs north from Winnipeg to Gimli on the west shore of lake Winnipeg. It is the route by which the summer resort of Winnipeg Beach is reached. Gimli is the centre of the first Icelandic settlement in Manitoba. Most of its inhabitants are engaged in commercial fishing on the lake.

Highway No. 12 is under construction from Winnipeg southeasterly to the United States border. It will run by way of the Sandilands Forest Reserve and will connect with a highway from the south at a point on the border near Pine Creek, Minnesota.

Highway No. 14 parallels the Red river from Emerson to Winnipeg. It is an excellent all-weather highway and over it passes the bulk of the motor traffic between United States points and Winnipeg. It affords a striking view of the extensive, fertile Red River lands. Along its route are some very interesting places including a Trappist Monastery at St. Norbert and the Manitoba Agricultural College a few miles south of Winnipeg.

Highways Nos. 18, 21, and 22 provide avenues of entry from connecting highways in North Dakota to Killarney, Deloraine and Melita respectively. Highway No. 25 runs northerly from Boissevain to Brandon; No. 26 continues northerly from Brandon to Minnedosa; and No. 28 runs northerly through Hamiota from No. 1 to No. 4.

OTHER RECREATIONAL ATTRACTIONS

Manitoba has a wide range of recreational resources, in the enjoyment of which her visitors are invited to join her own people. Many natural features constitute the basis of most attractive recreations, as, for instance, outlying lake regions that provide unexcelled opportunities for camping, canoeing, hunting and fishing. Other recreations have followed development undertakings such as motoring having followed the construction of suitable highways and golf the establishing of private and municipal courses.

Camping and Canoeing. Manitoba's extensive areas of Precambrian formation have networks of island-studded lakes connected by winding streams broken by numerous rapids and waterfalls which provide ideal settings for camping and canoeing. The prevailing woods are spruce, with a scattering of

poplar and birch. They provide ample supplies of fuel for camp purposes and create pleasing backgrounds to the scene. The present mining and prospecting activities in these regions, as well as their historic associations with the early fur trade, add an element of unusual interest:

Motoring and Camping. The highways of Manitoba are particularly inviting to the camping motorist. They lead through many beautiful valleys and into sparsely settled regions



In Hudson Bay in 1845

Barques "Prince Albert" and "Prince Rupert," Hudson's Bay Company's trading vessels off Mansel Island, Hudson Bay, 31st July, 1845.

(From painting by J. Spurling for Hudson's Bay Co. by permission H. B. Co.)

adjacent to lakes and woods, or to the several elevations of the Manitoba escarpment. They are not as crowded as are the highways of older countries. Nearly every centre has a tourist camp and many of these are exceptionally attractive and convenient.

Golf. This popular form of recreation has been developed to a remarkably large degree in Manitoba. Municipal golf courses are a feature of this progressive province. Winnipeg has two up-to-date municipal courses where visitors, for a small fee, may participate in this sport. Excellent golf courses have been widely established in other parts of the province.

Hunting and Fishing. Big game hunting and wing-shooting have been exceedingly popular in Manitoba for many years. As a result the game supply has been severely reduced. At present, stringent regulations are being enforced with a view of restoring it to its former state of plenty. The measures adopted promise to be successful and Manitoba will doubtless continue to enjoy these recreational advantages.

In the lake region of southeastern Manitoba there are numerous small bodies of water that will be conveniently accessible from new highways now under construction and that are well suited as game fish waters. Unfortunately the game fish resources of these lakes are not extensive. With a view to increasing them, the Manitoba Government is carrying on active work in stocking a number of selected lakes with black bass and other game fish.

The more remote parts of the province now provide big game hunting and fishing. Within easy reach of a number of highways there are some excellent wing-shooting areas including some marsh lands that have been set apart as public shooting grounds.

Historic Sites. Manitoba has some historic structures and sites of unusual interest. The itinerary of a holiday outing in the province can be made more interesting by including a visit to one or more of them.

The visitor in Winnipeg should not fail to see the ivy-covered gateway of old Fort Garry, which still stands, a reminder of fur trade days, in a little park within a few steps of the Fort Garry Hotel, the Canadian National Railway depot, and the junction of the Red and the Assiniboine rivers. Lower

Fort Garry, on the banks of Red river and about 15 miles north of Winnipeg, is well worth a visit also. It is in an excellent state of preservation.

There are many other places of historic interest in Manitoba but the completion of the Hudson Bay railway has made accessible the most massive and interesting of all, Fort Prince of Wales, at Churchill. This fort was one of the notable strongholds of North America. Its ruins and site have been acquired by the Canadian Government and are being preserved as a Canadian Historic Site.

Manitoba's history began on Hudson bay. With the rounding out of sixty years of provincial development, interest has shifted back to Hudson bay. The crumbling walls of old Fort Prince of Wales, on one shore of Churchill harbour, are in sharp and significant contrast to the modern structures of the ocean terminal rising on the opposite shore.

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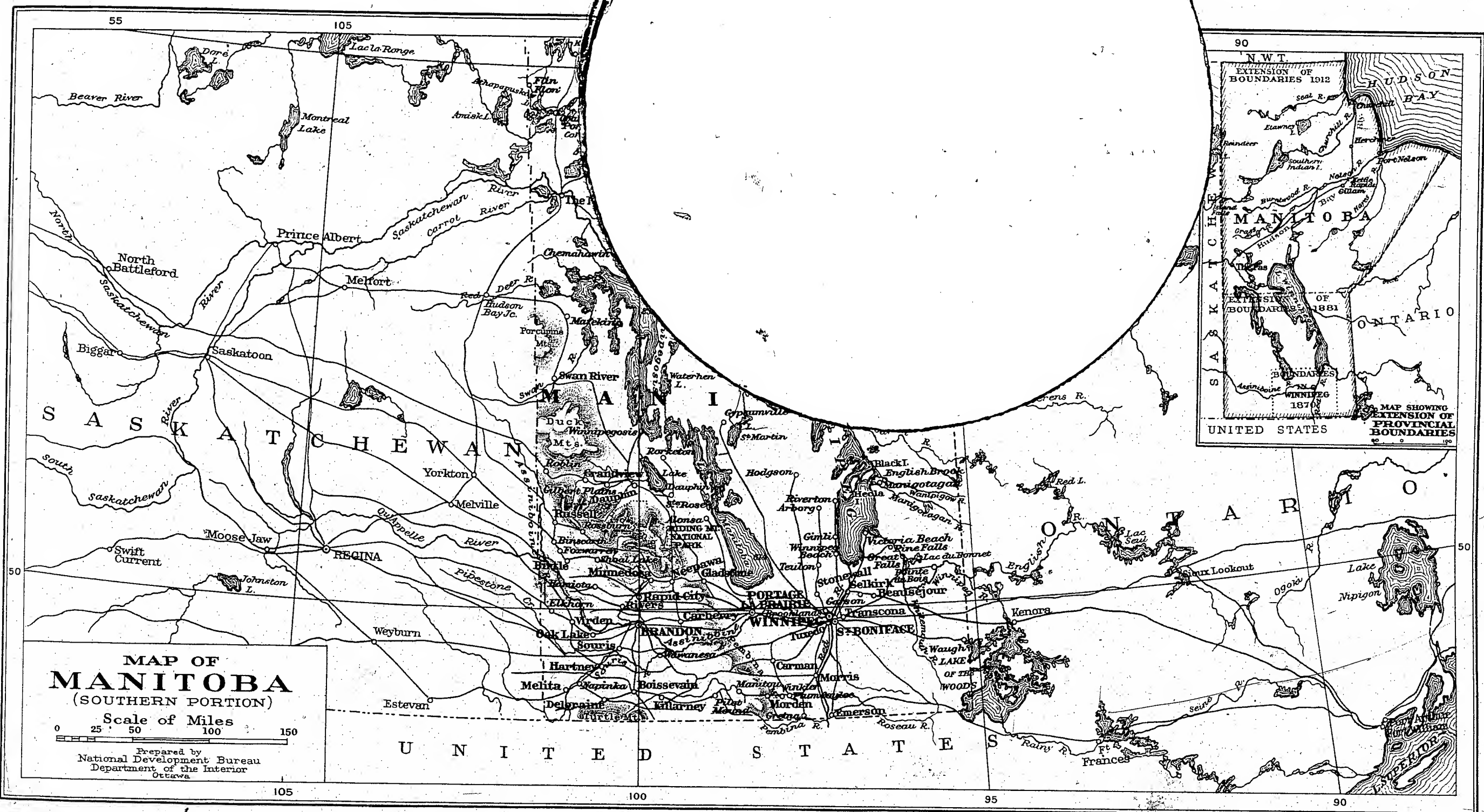
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**MAP OF
MANITOBA**
(SOUTHERN PORTION)

Scale of Miles
0 25 50 100 150

Prepared by
National Development Bureau
Department of the Interior
Ottawa

